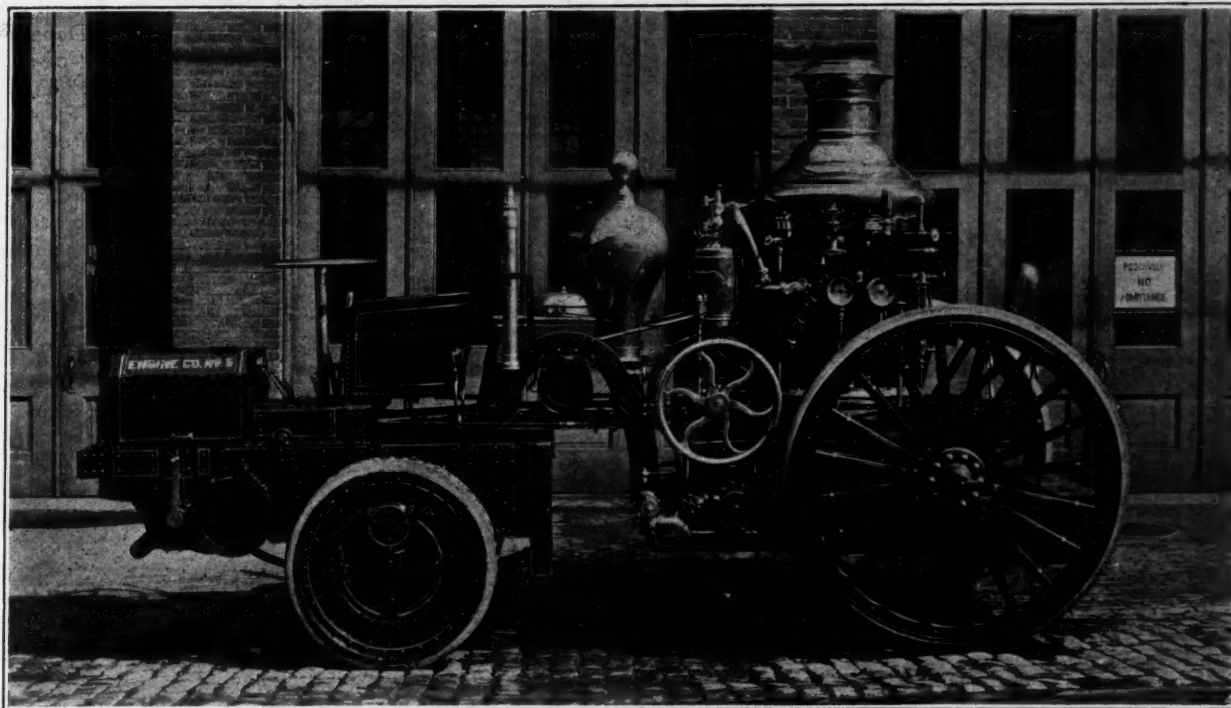


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No. 14



CHRISTIE TRACTOR AND OLD AMOSKEAG ENGINE.
Painted in Fire Department shop last week. Not yet in service.

THE PITTSBURGH FIRE DEPARTMENT

Appointments and Promotions Made Under Civil Service Rules.—Salaries—Equipment.—New Automobile Apparatus.—Department Repair Shop.—Fire Losses.—Fire Alarm Telegraph System.

By WILLIAM E. PATTERSON.

The Fire Department of Pittsburgh, Pa., can be traced further back in the records of the city than the town clock. While Pittsburgh was yet a village, while Indians and trappers mingled in the narrow streets and neighboring settlers had barely begun to recover from the devastating inroads which attended the close of the Revolutionary struggle, the first movement was taken toward the organization of a fire department.

In the beginning the department was not organized on the volunteer principle, but the service of every male inhabitant able to serve was compulsory, and enforced under penalty of fine, and the officers of the several sections were elected by the freeholders like other borough officials. This gave way, however, at an early date, to the volunteer service. The best men of early Pittsburgh were among the first officers of the Department.

The first organized company of which actual data can be obtained was the "Eagle Fire Engine and Hose Co." This was organized in 1794. The engine was a 7½ inch double chamber, built in Philadelphia, whence it was sent to Pittsburgh on wagons and in pieces and assembled after its arrival here. There were no arrangements for

fire hydrant or hose connections for the reason that both articles were as yet unknown. The water was poured into the engine by buckets and pumped up by main strength.

In 1832, when the Pittsburgh Fire Department was organized, the separate history of the Eagle Company was merged into that of the department. The members of the Eagle Company had the honor of seeing the first and last chief engineers of the Volunteer Department, William Eichbaum and John H. Hare, taken from the Eagle rolls.

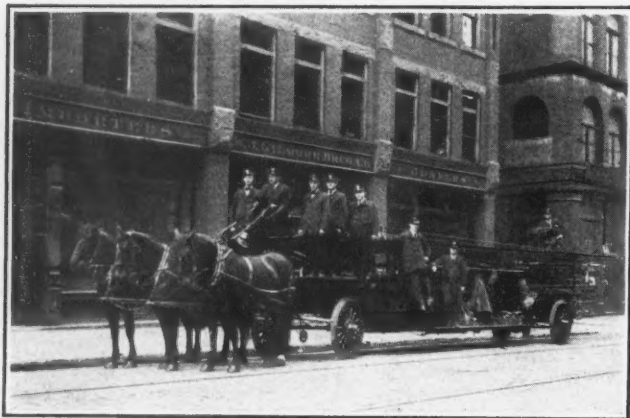
The Pittsburgh Paid Fire Department was organized on May 5th, 1870, with six engine companies, two hook and ladder companies, one hose company, and about sixty men, all told. In 1892, the Pittsburgh Fire Department consisted of seventeen engine companies and four hook and ladder companies, one chief of Department, four assistant chiefs and 174 uniformed firemen, besides one clerk, two drivers at city stables, one storekeeper and one at Infirmary, making a total of 184 men.

The greater Pittsburgh of today, formed by the annexation of Allegheny City and the boroughs of Beltzhoover,

Montooth, Esplen, Sheridan, Elliott, West Liberty, Brookline and Beechview, all of which adjoin the South Side, and Sterritt Township, adjoining the extreme eastern end of the city, now covers an area of 40.67 square miles, of which old Pittsburgh, including the South Side and annexed boroughs comprises 32.67 square miles. The city is divided into three separate areas, by the Ohio, Allegheny and Monongahela Rivers. Old Pittsburgh comprises that portion of the city situated between the Allegheny and Monongahela Rivers; the South Side, that portion south of the Ohio and Monongahela Rivers; the North Side (formerly Allegheny City) that portion north and west of the Allegheny and Ohio Rivers. The different sections of the city are connected by eight highway bridges across the Allegheny river and six across the Monongahela river. There are also six railroad bridges crossing these two streams.

Of a total of 775 miles of public streets and alleys in Pittsburgh, 521½ miles are paved. Streets in the congested district range from 20 to 80 feet in width, the average width being about 60 feet. In the residential districts they are mainly 50 feet wide.

The total river frontage amounts to 29.6 miles. The total estimated population of the greater city as estimated by the Bureau of Health is 565,000.



85-FOOT SEAGRAVE HOOK AND LADDER, NO. 5.

Many of the buildings, municipal, commercial, educational and religious, are solidly built structures of brick, stone, steel and fire-proof material of the latest type. The downtown business district of old Pittsburgh contains 33 buildings exceeding 10 stories in height. These are all office structures and large store buildings. One is 26 stories high, one 25 stories high, one 24, one 21, and two 19 stories high.

Among the leading industries are the manufacture of wire, structural steel, machinery, stoves, stationary engines, locomotives, steel cars of all descriptions, air brakes, sanitary goods, armor plate, glass ware, cork goods and cigars. There are also several large pickling and preserving plants, among them being the H. J. Heinz plant, located on the North Side, manufacturers of the famous "57 Varieties," the largest plant of its kind in the world. The city is an important railroad centre, being of the first importance as a shipping point for coal, iron and steel.

Such a city requires a fire department equipped in a first-class manner to protect the thousands of lives and millions of dollars' worth of property within its limits. Such a fire department Greater Pittsburgh has, and in proportion to the size of the city it may fairly be questioned whether its superior in equipment can be found. In many of its details it is excelled by none. As it is with equipment so it is with officers and men. With their selection and promotion politics have very little

to do at the present time. Appointments to the department and promotions are made under municipal civil service laws which were adopted during 1907, and all appointments and promotions are made under them by the Director of the Department of Public Safety. The chief of the Fire Department is the only member of the Department not under Civil Service laws, he being appointed for an indefinite period by the director of the Department of Public Safety, with the approval of the Mayor. Miles S. Humphreys, the present chief of the Department, has held the position since he was appointed chief in September, 1891. Members of the Department may retire on half-pay pension after 20 years of service. A member may retire at any time for physical disability, on the recommendation of a Court of Inquiry, consisting of members of the Department appointed by the director of the Department of Public Safety. No age limit is set for retirement, but only a few of the men are over 60 years of age, and these are mostly officers and engineers. If disabled or killed in the service, a member or his family receives \$1,000 from the city. A Mutual Relief Association, composed exclusively of members of the Department, pays a death benefit of \$700 and a weekly benefit of \$5.00 in case of sickness or accident.

The enforcement of the rules and regulations made by the director of Public Safety is in the hands of the officers of the Department. All cases of violation of the rules are given a hearing before a trial board, at present consisting of the chief of the Department and assistant chief engineers, the chief acting as Presiding Judge. Pending trial, a member having charges preferred against him for violation of the rules may be suspended by the chief. The findings and recommendations of the Trial Court are sent to the Mayor, who must act on the recommendation of the board or order a new trial. A copy of the charges, testimony, etc., are placed on file and kept for future reference. The work of the Trial Court is thorough and impartial and discipline in the department is strictly maintained.

The salaries of Pittsburgh firemen are as follows: Chief Engineer, \$4,000 per year; Deputy Chief Engineer, \$3,000; District Chiefs, \$2,000; Captains, \$110 per month; Lieutenants, \$97.50; Engineers, \$100; Drivers, \$95; Hosemen and Laddermen (3rd year) \$90, (2nd year) \$85, (1st year) \$80 per month.

The following salaries will become effective December 1st, by virtue of an ordinance passed by City Council April 30th, 1912:

Captains, \$125 per month; Lieutenants, \$107.50; Engineers, \$110; Drivers, \$105; Hosemen and Laddermen (1st year) \$80, (2nd year) \$85, (3rd year) \$90, (4th year) \$95, (5th year) \$100.

Members of the Department are allowed three hours per day for meals, a 24-hour leave of absence every fifth day and two weeks annual vacation.

Watch is maintained at each fire station from 9 P. M. to 6 A. M., the men reporting hourly by telephone call from the Fire Alarm Headquarters.

FIRE APPARATUS.

The following is the apparatus in the old Pittsburgh Department at the present time:

FIRE ENGINES:

One extra first size American, one first size American, one second size American, one fourth size American, and two fifth size Americans.

One double extra first size Amoskeag (self-propeller), one extra first size Amoskeag, four first size Amoskeags, five second size Amoskeags, eight third size Amoskeags, and three fourth size Amoskeags.

Three second size LaFrance engines, one second size Manning, and two fifth size Nott Universal Counterbalanced engines.

All of the above engines are of the double pump piston

type, with crane neck frames, except two of the fourth size Amoskeag engines which were old Harp-tank single pump, rebuilt with crane-neck frames. One first size Amoskeag engine has a Fox boiler, one second size Amoskeag has a Fox boiler, and two third size Amoskeags have Ahrens boilers. Each engine is equipped with hand and automatic relief valves, a few having compound suction gauges. Each carries two twenty-foot lengths of 4½-inch or 6-inch stiff suction hose fitted with Bliss couplings for quick attachment to engine and hydrant.

HOOK AND LADDER TRUCKS:

One 85-foot American-LaFrance quick-raising spring-balanced aerial truck, equipped with roller-bearing wheels, rubber tires and friction band brakes, drawn by three horses.

One 85-foot Seagrave quick-raising spring-balanced aerial truck, equipped with rubber tires and automobile steering gear, drawn by three horses.

One 85-foot Babcock aerial truck, equipped with roller-bearing wheels, rubber tires, friction brakes and drawn by three horses. Also deck-turret nozzle on the running board, same having connections for three lines of 2½-inch or 3-inch hose.

Two 75-foot screw hoist Hays aerial trucks, each draw by two horses.

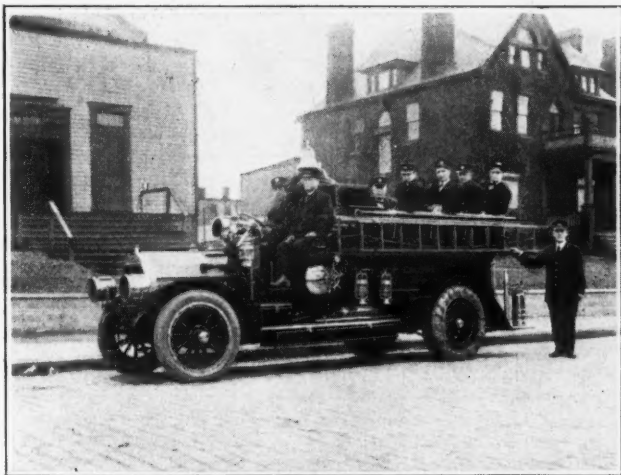
One 50-foot Babcock aerial truck.

There are seven city service trucks of the following makes: Two Seagrave, 2 LaFrance American and 3 that were built by the city. One of the Seagrave trucks has rubber tires, and the other has automobile steering gear, and the two LaFrance trucks have friction band brakes. All of the city service trucks are equipped with 40 and 50-foot ground extension ladders.

CHEMICAL ENGINES:

Five combination chemical engines and hose wagons of the Champion type with 60-gallon tanks under the seat, four of same being equipped with deck turret nozzles, each with connections for three lines of 2½-inch or 3-inch hose and rubber tires, drawn by two horses.

Two combination chemical engines and hose wagons, each with two 35-gallon chemical tanks under the seat, both equipped with rubber tires and friction band brakes and one of same equipped with a Glazier turret nozzle with openings for three lines of 2½-inch or 3-inch hose, drawn by two horses.



KNOX AUTOMOBILE HOSE AND CHEMICAL, NO. 26.

One old style combination chemical and hose wagon with two 35-gallon chemical tanks under the wagon bed between rear wheels, drawn by two horses.

Four Seagrave combination chemical engines and hose reels, each with 40-gallon chemical tank under seat, reel carrying 1,000 feet of 2½-inch hose, and friction brakes on both reel and wheels, drawn by two horses.

Two double 60-gallon tank chemical engines, one being equipped with deck turret nozzle with openings for three lines of 2½-inch or 3-inch hose, each drawn by two horses.

HOSE WAGONS:

Fifteen four-wheel horse carriages of the Amoskeag type, each carrying from 800 to 1,000 feet of 2½-inch or 3-inch hose, generally with one or two section of 3-inch hose on the end of the line, drawn by two horses.

Three plain hose wagons, each carrying from 900 to 1,200 feet of 2½-inch fire hose, drawn by two horses.

OTHER APPARATUS:

One 65-foot water tower of the Champion type with manual raising and controlling gear, equipped with two deck turret nozzles. The tower has openings for receiving four lines, and each turret three lines of 2½-inch or 3-inch hose; drawn by two horses.

One deluge combination wagon equipped with a perforated steel bed set on a channel iron frame carrying 900 feet of 3-inch and 2½-inch hose in two lines of 450 feet each. One 24-foot telescopic water tower and two deck turret nozzles, each with openings for receiving three lines of either 2½-inch or 3-inch. By the operation of a gate valve on each turret and one connected to the feed pipe leading to the tower, the whole capacity of six lines of hose can be turned into the water tower, or either of the turrets or all three can be operated at the same time. This wagon was built from special designs by the Fire Extinguisher Mfg. Co. of Chicago, Ill. The wagon is equipped with Archibald wheels fitted with roller bearings, rubber tires and friction band brakes and weighs 11,000 pounds loaded ready for service with six men and is drawn by three horses. The wagon is in service with Engine Co. No. 19 in the downtown business district, where it answers almost all first alarm fires and has given most excellent service.

AUTOMOBILE APPARATUS:

One American LaFrance combination automobile hose wagon and chemical engine with 40-gallon chemical tank in service at Engine Co. No. 60.

One Knox combination automobile hose wagon and chemical engine with 40 gallon chemical tank, in service at Engine Co. No. 26.

One Webb combination automobile hose wagon and chemical engine with 40 gallon chemical tank in service at Engine Co. No. 31.

Three Knox and three American-La France combination hose and chemical engines have just been placed in service, replacing six Amoskeag horse-drawn hose carriages.

All repairs, alterations and rebuilding of fire apparatus and appliances (except putting new boilers on fire engines), besides the building of all the police patrol wagons, fuel wagons and supply wagons and what other apparatus that can be built, and the painting of all appa-



HOSE AND CHEMICAL, NO. 38.

ratus is taken care of at the fire department repair shop, South First and Carson Streets, which is in charge of the superintendent of machinery. There are 15 employees in the shop divided as follows: Superintendent of machinery, assistant superintendent of machinery, two machinists, two blacksmiths, three blacksmith helpers, two wagon builders, one coach painter, one engineer, one utility man and one laborer.

Besides the above employees there is a deputy superintendent of machinery who has charge of the repair shop at Engine House No. 47 on the North Side, who looks after all minor repairs that can be taken care of at this shop for the fire companies and fire stations on the North Side.

The fire department of old Allegheny City was under the command of chief John K. Hunter, who was retained

as deputy chief of the greater Pittsburgh department and put in command of the North Side companies (old Allegheny City), assisted by William Graham and Michael Shanahan, the two former district chiefs of old Allegheny City.

The old Allegheny Fire Department before consolidation with Pittsburgh consisted of 16 engine houses, housing 10 engine companies, six hose companies and five truck companies, with the following apparatus in service: One first size Silsby rotary engine, two second size Silsby rotary engines, three second size Amoskeag engines, one second size La France engine, one second size Metropolitan engine, one third size Metropolitan engine and one fourth size Metropolitan engine; all of the above of the double piston, crane neck type.

Two double 35-gallon tank old style Holloway combination chemical and hose wagons, one being equipped with Monitor deck turret nozzle; 14 4-wheel hose reels, each carrying 800 feet $2\frac{1}{2}$ inch hose, all built at the Allegheny Fire Department repair shop.

One 75-foot Seagrave quick-raising spring-balanced aerial truck, with rubber tires; one 65-foot Babcock aerial truck remodeled and equipped with American La France quick-raising spring-balance gear; one 60-foot American La France quick-raising spring-balanced aerial

Again by an ordinance passed by City Councils November 12th, 1908, 77 hosemen and laddermen were added to the greater city department for the purpose of granting six 24-hour passes or leaves of absence per month.

RECENT IMPROVEMENTS.

Among the improvements made in the greater city department in the past two years has been the construction of eight handsome two-story brick and stone fire stations for new fire companies, at a total cost of \$175,000.

For Engine Co. No. 59, a frame city hospital building was remodeled into a temporary engine house until a more substantial building is erected later on. For Engine Co. No. 60, a house was provided at a cost of \$2,000 which is to be replaced later by a good brick and stone structure to accommodate an engine company, truck company, and probably a police station.

Three combination automobile hose wagons of the Knox type, equipped with a 40-gallon chemical tank, and three combination automobile hose wagons of the American La France type equipped with a 40-gallon chemical tank are now being built for the city and when delivered and placed in service will replace old worn-out hose wagons in companies located in the suburban districts of the city.



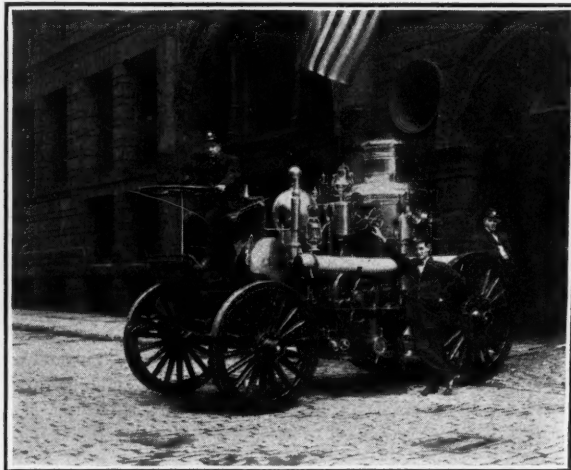
SECOND SIZE AMERICAN ENGINE, NO. 28.

truck equipped with a 50-gallon chemical tank and a Heart water tower pipe; two village trucks with 40-foot ground extension ladders and one large fuel wagon; making 32 pieces of apparatus in service all told. The reserve apparatus consisted of two second size Amoskeag engines that had been in service many years and two 4-wheel hose reels.

The manual force of the department consisted of chief of department, three assistant chiefs, 16 captains of Engine Companies, 2 captains of Truck Companies, 10 engineers, 82 hosemen, 23 laddermen, 2 fuel wagon drivers, superintendent of machinery and one hoseman and clerk, a total of 141 men in all.

The chief of the Department received \$2,500 per year; assistant chiefs, \$1,800 per year, captains \$100 per month, engineers \$98 per month and hosemen and laddermen \$90 per month. Members of the department were allowed a 24-hour leave of absence every fourth day and 15 days annual vacation. There were 70 horses in the department hauling apparatus.

Almost immediately after consolidation with Pittsburgh steps were taken toward improving the old Allegheny Department and putting it on a par with Pittsburgh and by an ordinance passed by City Councils April 10th, 1908, 70 hosemen and laddermen were added to the old Allegheny Department in order to man their fire companies equally with those of Pittsburgh.



AMOSKEAG SELF-PROPELLED ENGINE, NO. 32.

A 90 h.p. Christie tractor was built for the department and attached to Engine No. 5, a third size Amoskeag. This company answers more alarms than any other and covers a large and very hilly territory. The engine was painted last week in the shops of the fire department, and has not yet gone into service in its new form. This tractor is entirely different from the Christie tractor on Engine No. 58 of the New York Fire Department, and is believed to be an improvement over it. Driving and steering are both accomplished through the tractor wheels. The gasoline motor and gear case are of semi-steel cast in one piece. The motor is 4-cylinder, 4-cycle, $5\frac{1}{2}$ -inch diameter by 7-inch stroke, with a maximum speed of 1,500 revolutions. The transmission is of the progressive type, with two speeds forward and reverse, the high speed being driven direct with a gearing ratio of 6 to 1. To permit of sharp turning, the regular operator's steering wheel and the tractor wheels are supplemented by a steel turntable, the lower part of which is bolted to the tractor and rotated by worm gear and additional heavy gearing driven direct from the main transmission box. The latter adds 60 degrees turning angle to the 30 degrees of the driving wheel, or a total turning angle of 90 degrees.

During the year ending February 1st, 1908, \$663,192 was expended for the Bureau of Fire. This was previous to consolidation with Allegheny City. The average per

capita expense for the years 1905, 1906 and 1907 was \$2.25, based on an estimated population of 286,000. For the three years previous to consolidation the expenses for the old Allegheny Fire Department averaged \$184,378 or about \$1.27 per capita, based on a population of 145,000.

The expense involved for running the greater city department for the year 1909 was \$1,040,300.43; 1910, \$1,034,263.38 and 1911, \$1,283,095.26.

These figures do not include the expenses of the fire alarm telegraph systems, which are parts of the Bureau of Electricity.

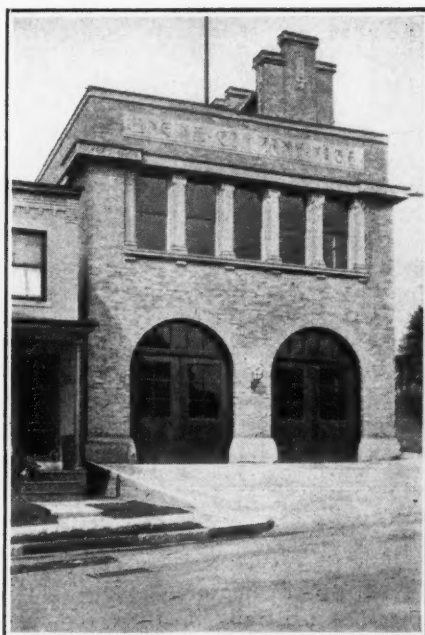
The manual force of the greater Pittsburgh Fire Department at the present time consists of the following officers and men (Uniformed rank):

Chief of Department, deputy chief, 8 district chiefs, 62 captains, 75 lieutenants, 46 engineers, 46 assistant engineers, 129 drivers, 435 hosemen and laddermen and 8

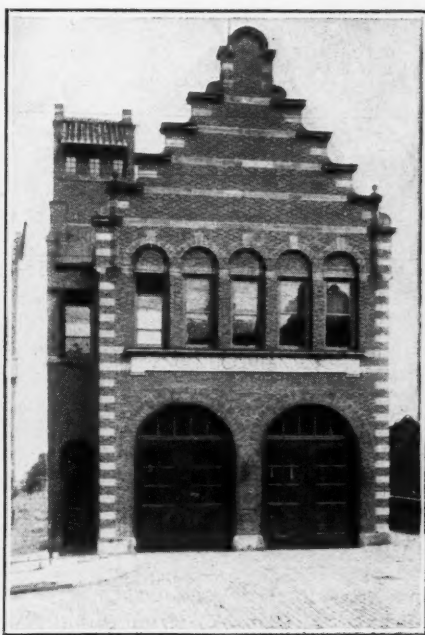
size Amoskeag engine, 2 second-size Amoskeag engines, 2 third-size Amoskeag engines, 1 fourth-size Amoskeag engine, 6 hose carriages, 1 Holloway combination wagon, 1 Champion combination wagon, 1 85-ft. Hays aerial truck.

FIRE LOSSES.

A comparison of the fire losses per capita in the leading cities compiled by the National Board of Fire Underwriters, during the year 1911, revealed an excellent showing by Pittsburgh. Where in New York the fire loss per capita was \$2.94, in Chicago \$2.18, Philadelphia \$1.46, St. Louis \$1.36, Boston \$3.00, Baltimore \$2.14, Cleveland \$2.45, San Francisco \$2.74, and Buffalo \$3.16, Pittsburgh's fire loss was \$1.87 per capita. So that in a list of 10 of the largest cities of the country, but two have smaller per capita fire losses than Pittsburgh, and these figures were for 1909, a year that did not show Pittsburgh's best record. For five or six years, this city has had the



House of Engine 38 and Truck 19.



Engine No. 37.



Chemical and Hose, No. 57.

FIRE DEPARTMENT HOUSES BUILT IN 1911.

fuel wagon drivers; making a grand total of 811 uniformed firemen.

The number of companies in service at present is as follows: Engine Companies, 45; Hose and Combination Chemical Companies, 14; Truck Companies, 21; Chemical Companies, 2, and one Water Tower Company; making a grand total of 83 Companies.

The apparatus in service at present is as follows:

Double extra first size engines (self propelled)	1
Extra first size engines.....	2
First size engines	6
Second size engines.....	17
Third size engines.....	9
Fourth size engines.....	5
Fifth size engines.....	5

Total, engines45

Aerial hook and ladder trucks, 9; city service trucks, 12; total, 21.

Hose carriages or reels, 36; plain hose wagons, 3; combination chemical hose wagons and hose reels, 17; double 60-gallon tank chemical engines, 3; automobile combination chemical and hose wagons, 3; water tower, 1; making a grand total of 129 pieces of apparatus in service.

Fire apparatus in reserve in the greater city: 1 first-

smallest per capita loss of any of the cities over the quarter million population mark. In 1908, for instance, Pittsburgh's loss was only \$1.01 per capita, the lowest of all. Compared with the loss of \$3.10, as an average for 252 American cities, this Pittsburgh record is more remarkable. The 1908 mark, in fact, came closer to the European record than any other large American city.

The following table gives the number of alarms, insurance and losses as compiled from the records of the Bureau of Fire for the past nine years:

Year	Alarms			Insurance	Loss
	Gong	Still	Total		
1903	786	449	1235	\$6,047,941.00	\$553,324.00
1904	779	534	1313	9,923,709.00	431,619.00
1905	720	533	1253	7,656,900.00	567,799.00
1906	716	553	1268	7,490,225.00	406,437.00
1907	742	689	1431	11,247,900.00	644,103.00
1908	856	904	1760	6,891,185.00	572,149.50
1909	801	871	1672	9,494,759.00	1,085,242.00
1910	866	1038	1904	13,185,540.00	979,252.70
1911	794	1006	1800	11,034,238.00	947,905.00
Averages	784	731	1515	\$9,219,166.00	\$687,536.80

BUREAU OF ELECTRICITY.

The Bureau of Electricity, of Pittsburgh, Pa., comprising the fire alarm telegraph systems, department telephone and police signalling systems, and the electrical inspections branches, is located on the fourth floor of the

Public Safety Building, on 6th Avenue, and is in charge of Robert J. Daly, superintendent, and Henry Angloch, assistant superintendent. There are six operators beside the chief operator, Robert Rosemund, two box inspectors, a foreman of construction, eight linemen, a battery man, a cable splicer, and a driver for the construction and repair wagon. The six operators are on duty in three shifts of eight hours each. A Gamewell manual central office system is in use, with two operators always on duty. From a manhole in the basement, cables enter from the underground system, passing up through a brick wire shaft containing all fire alarm, police signal, and telephone wires and light circuits for the building, to the fire alarm office on the fourth floor, where the wires in use are connected to slate terminal boards. All of the circuits are connected to a slate panel protector board of ample capacity and good design, which provides electro-mechanical circuit breakers, one-ampere enclosed fuses and lightning arresters for each circuit. There are 31 box circuits which run to a 40-circuit relay board provided with relays, Morse keys, tapper bells and circuit indicators. There are 11 gong circuits connected with two Gamewell, 4-figure, 3-dial, 2-speed manual transmitters, either of which can be used to operate all of the gong circuits; there is a small tapper bell of distinctive tone on each circuit. The gong sets are connected in multiple to two sets of batteries. There are six joker circuits which connect to the contacts of a master relay, which is operated by the box circuit relays, through local open circuits, on which are also individual pens on a 50-pen Pierce register, and also a large tapper bell; switches are provided for cutting out the register, the joker relay, or the whole of the local circuit while testing boxes. The above equipment was moved to the present location in 1897 from the top floor of the City Hall, at which time three of the battery boards were installed. There are 793 fire alarm boxes, all installed since 1891, of the following types: Gamewell, plain interfering weight actuated, sector pull boxes with hard rubber break wheels and key brakes, 595; Gamewell non-interfering successive type, spring actuated trigger pull boxes, 45; Star non-interfering, successive spring actuated trigger pull boxes, 153.

Each box is equipped with shunt, Morse key, lightning arrester, and a signal bell; 50 in the congested business district have keys attached under glass guard. Four rounds of box alarms are received on the box circuit tapper, the pen register and the local circuit tapper and are automatically transmitted over the joker circuits to fire station register and jokers by the joker relay. In the meantime, the operator in charge sets up the box number on the manual transmitter, which sends out three rounds of the box number on all gong circuits. Installed in each fire station is a large 15-inch gong, connected to one of the gong circuits, a punch register or tapper connected to one of the joker circuits, and a department telephone.

A private telephone system is maintained by the department, a 100-circuit switchboard of the ordinary branch exchange type being used with circuit connecting all fire stations and chief's offices, residences of the chiefs, the superintendent and assistant superintendent and the linemen, the A.D.T. office and the Holmes Electric Co. There are three trunk lines to the Grant Exchange of the Bell Telephone Co. and the Main Exchange of the Pittsburgh and Allegheny Telephone Co. One line to each exchange is always kept open for fire calls. Besides there is a direct line to the North Side (Allegheny) fire alarm office. Only nine circuits are used to connect all fire stations, these having from four to six 'phones on each. Only 50 circuits are in use all told.

The North Side fire alarm system, under the supervision of deputy superintendent Elmer E. Loomis, is altogether up-to-date. He is assisted by three operators

and three linemen, with one operator on duty at all times. The central office equipment installed in 1897-98 is of the Gamewell automatic type and was designed by Mr. Loomis. The office is equipped with apparatus to forward automatically an incoming signal to the engine houses, and, if more than one alarm is coming in at the same time, all are recorded in the central office, but only one is transmitted to the engine houses at a time. The central office is located on the top floor of the old Allegheny City Hall. Three cables enter the basement from the underground conduits and are carried up to three terminal heads in the operating room to the rear of a 50-circuit, slate protector board, where circuits are protected by half-ampere fuses, plate lightning arresters and electro-mechanical circuit breakers; thence they are carried to two 10-circuit slate switch-boards equipped with the usual switches, Morse keys, protective devices, meters and rheostats for testing and charging the storage batteries, annunciators, red lights and box lists, and with relays which may be worked on either open or closed contacts. All gong and local circuits are connected to a 10-circuit slate switch-board. Two 10-circuit automatic, non-interfering repeaters transmit alarms. A 10-circuit, two-dial, four figure, one-speed manual transmitter is used at present for transmitting signals or sending out a box alarm received while another is being sent out by the repeater. Box alarms are recorded by a time stamp punch and two 10-pen registers. Red lights indicate the circuit, repeater and register in use. There is also a red light and annunciator on each gong circuit. There has been added lately to this office an automatic line tester for testing the circuits. It is so arranged as to start automatically from a master clock and test every five minutes, fifteen minutes, half-hour or hour, or at any time desired. If it is desired to test the lines at any other time than that to which the machine is set, facilities are provided for doing so. It is provided with annunciators to indicate grounds on any line, also whether they are near the right arm or left arm of the circuit. It also tests the other circuits for continuity and records it upon a punching register. Each row of five annunciators has a red light, which lights automatically if any of its lines are grounded. The line tester and register are self-winding and protected by a double glass case over which the annunciators are set.

From the terminal board each side of all circuits is connected to the protector board so that each side of the line passes through a plush or magneto protector, lightning arrester, and a pair of fuses. On this board, also, the terminals of all lines are connected to the automatic and the manual line testing apparatus so that all the lines can be tested for grounds in their normal condition or after being separated into office and street sections. From protector boards both sides of each circuit are carried to the working boards and connected so as to serve the apparatus. The storage battery boards are in units of 10-circuit boards and lines from this board are carried to their various points throughout the office. On top of these boards are box list tubes of glass, sustaining a red lamp. A line and amperage are indicated at the same time. The annunciator is immediately under the lamp. There is a line relay mounted on a metallic base and located inside of a pocket, protected by a bevel glass door with metallic frame, the relay tension being accessible from the outside. Below the relay boxes are located line keys built entirely of cast brass, the local switch for the relays being also mounted on these boards, immediately under the relay box. The indicator needs no description. The apparatus was designed and built by the Gamewell Fire Alarm Telegraph Co. in accordance with plans and specifications made by deputy superintendent Elmer E. Loomis.

There are 280 fire alarm boxes, all of the spring actuated, trigger pull, non-interfering type. The original installation, consisting of 59 boxes, was started in 1890; all of these were exchanged for the Gardner type of box in 1898, when the present system was installed. Each box is equipped with a Morse key and saw tooth lightning arrester. There are 67 boxes on the underground system mounted on iron pedestals designed by Mr. Loomis, which provide ample space for cable terminals back of the box.

One or two 6-inch gongs connected to the nearest box circuit and a 15-inch gong connected to a gong circuit are provided at each fire station, three of which also have punch registers.

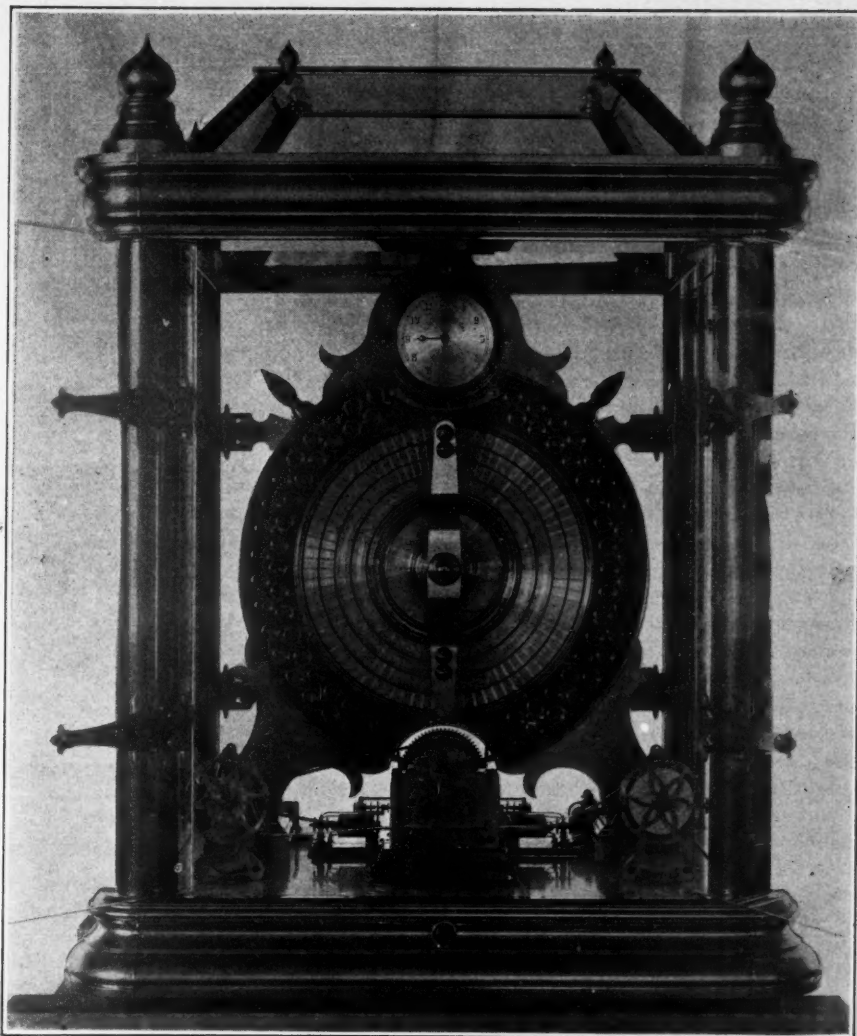
Automatic releases for horses and house lighting switches are also provided at each station. A private telephone system is maintained by the department, which was installed in 1894. A 100-circuit switchboard located in the operating room and leased from the Central District & Printing Telegraph Co., has connections to each fire station, to residences of the fire chiefs, the deputy superintendent and each lineman, to one deputy chief's office, police headquarters, each patrol stable, and a trunk line to both the Bell and P. & A. Telephone exchanges and the Pittsburgh Fire Alarm headquarters. No trunk lines are reserved for fire calls. There are from one to three phones, usually two, on each of the 21 department circuits.

When there is a possibility of the Allegheny river rising to a flood height of 30 feet or more, the mechanism of about 20 fire alarm boxes in the underground district have to be removed and cable heads capped. This has occurred four times in five years. A trouble wagon is kept at a patrol station and one lineman lives nearby. The chief lineman lives within a block of headquarters, thus enabling a repair gang to be readily summoned.

AMOUNT OF FIRE HOSE IN SERVICE.

In one of the tables given in this issue will be found statements of the amounts of fire hose owned by the departments of each of more than 800 cities. These quantities will be found to vary greatly, the amounts, of course, being more or less directly proportional to the size of the city. In order to compare the figures the most practicable way seems to be to reduce them to amounts per capita. When this is done it is noticed that the amount per capita varies with the size of the city. There are several reasons for this, one being that the larger cities have their population more concentrated, and thus more buildings can be reached by a single line of hose.

Taking all the cities listed, we find that the average amount of hose is about one foot for each $3\frac{1}{2}$ individuals in the population. When we come to subdivide the cities in accordance with populations, however, we find that those having more than 500,000 have only one foot of hose for each 5.5; those having populations between 100,000 and 500,000, one for each 4.8, and in cities of between 50,000 and 100,000 the amount is one foot for each 4.15. The number of persons per



AUTOMATIC LINE TESTER FOR TESTING CIRCUITS.

foot of hose is therefore seen to be decreasing with the size, and when we reach the smaller cities we find that in those of 5,000 population or less there is an average of one foot of hose for each 1.29 persons.

There are, of course, great variations between individual cities in each of these classes, but it cannot invariably be assumed that those having the greatest amount of hose per capita are in every case better fitted to meet the fire protection requirements of the city in question. For instance, the distance between fire hydrants is a very important consideration. In cities where this distance is about 300 feet, for example, the service rendered by a given amount of hose might be superior to that in another city of the same population having double the amount of hose but where the hydrants are much farther apart. (This matter was discussed in two or three articles in Municipal Journal during the past summer.) The quality of the hose, also, would have some bearing upon efficiency of service, since if a poor hose is in use which is liable to burst more or less frequently, a greater amount of reserve hose should be kept on hand.

In general, however, the figures of the table will give an idea of the average practice in this respect in the cities of the country, and will enable any city to learn how its department compares with those of other cities in the same class. As the tendency is to delay purchasing new hose as long as possible rather than to overstock, the aim of departments should undoubtedly be to keep well above this average, and not accept it as the best or even good practice.

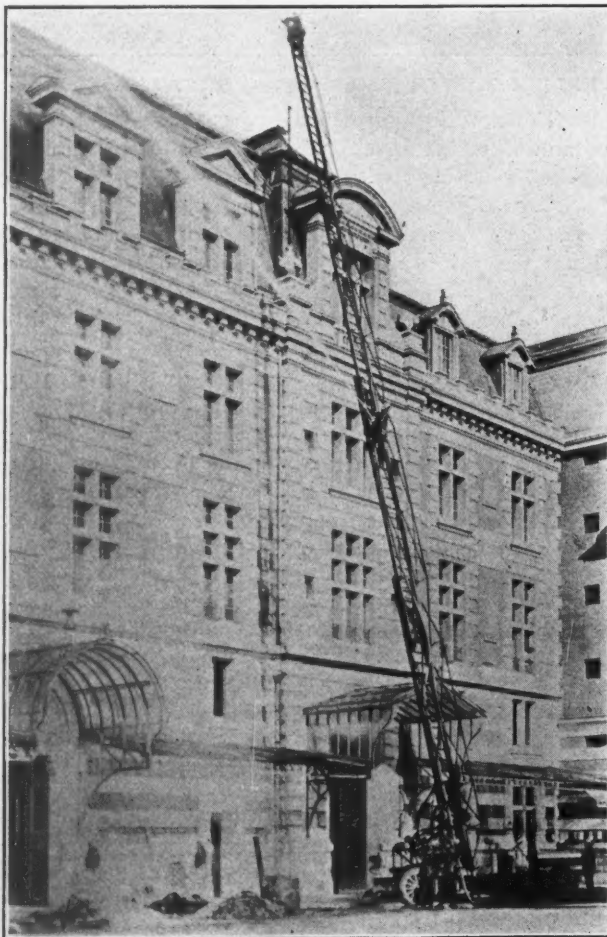
PARIS MOTOR FIRE APPARATUS.

Extension Ladder Trucks, Pumping Engines and Other Motor Apparatus Showing Some Radical Differences From American Designs.

By FRANCIS P. MANN.

Within the last few years the Paris fire department has been engaged in organizing its service according to the most modern ideas, and it has now adopted the different types of gasoline automobile car which we illustrate here. It may be of interest to note that the fire department in principle forms part of the military corps, which is commanded by various officers; but this firemen's regiment is in fact placed at the disposal of the Paris municipality, so that to a certain extent it becomes one of the branches of the municipal service.

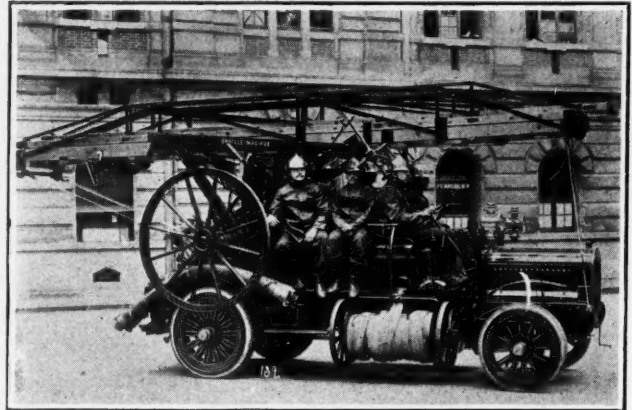
Several different standard types of power car have been designed to meet the various needs of the service. One of the newest of these is a Delahaye power wagon truck on which is mounted a turntable base with a long ladder, this being entirely supported on the car, although having a length of 80 feet. The ladder is extended in a manner similar to that employed in this country. It can be set at any angle and rotated about the base so as to bring the top end near various windows around a court or on different sides of the street, and persons can be taken out of buildings and transferred to others without their needing to descend to the ground. The new ladder car is one of the most recent improvements in city fire wagons, and its design involves much carefully worked-out mechanism. When in service, the rear turntable platform of the car is blocked directly on the rear axle so as to take the weight of the ladder off the car springs. A 5-horse-power electric motor



EXTENSION LADDER ON TURNTABLE BASE.

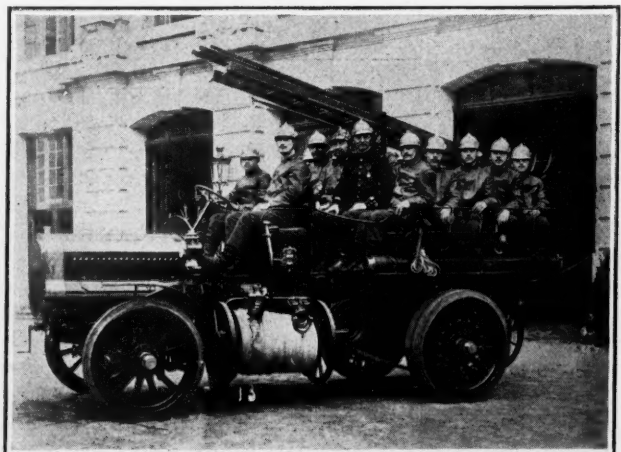
serves to run out the four sections of the ladder by means of steel cable and drums. On the wagon is a dynamo driven by the gasoline motor which furnishes the current, and a portable searchlight is also run on this current. The second movement is to incline the ladder at a given angle about a pivot base, while the third movement consists in rotating the turntable as a whole. Hand crank mechanism serves for these latter operations.

Another type of power car serves the double purpose of carrying a two-wheeled ladder truck mounted upon it, and also to operate a pump for the hose. On the rear of the car is placed the ladder truck, and when on



CAR CARRYING PUMP AND SMALL LADDER TRUCK.

the spot the truck is detached from the car and rolled to the ground down a pair of inclined rails in the rear. In this way the truck can be run into narrow places which the automobile as a whole could not enter. On the car is mounted a turbine pump having a capacity of 500 gals. per minute, and it is driven at high speed by a set of gearing which is driven by the gasoline motor of the car. Much difficulty was experienced in designing a turbine pump of this kind, but such a pump was considered necessary, as it is found impracticable to run a piston pump from a gasoline engine, for various reasons. At each side of the automobile is a removable hose reel for 600 feet of hose. When in service, the



CAR CARRYING PUMP, HOSE AND SCALING LADDERS.

gasoline motor is well cooled by an extra water circulation taken from the water pump itself.

We also illustrate what is called the "motor pump wagon." This will take a crew of 15 men seated in front and at the sides. The automobile is of the Delahaye 50-horse-power type and is intended to run at high speed. In front are two hose reels, with a third placed at the

rear of the car, holding in all about 2,500 feet of hose of large and small sizes. A turbine pump of the kind just mentioned is fitted on this car, and is driven from the 4-cylinder motor. The wagon carries a set of small ladders and has space for holding fire appliances, including life saving helmets with oxygen tubes.

A feature of the Paris fire department is the salvage wagon, which consists of a specially designed automobile. It is intended to give the needed protection from damage not only by fire, but also by water, and its valuable aid is recognized by the fire insurance companies' syndicate, which allots this service an annual subsidy of \$40,000. Most of the car is occupied by a box body with numerous compartments for holding large canvas cloths for spreading over furniture or other effects in the stories underneath the fire; also mops, sponges, sawdust bags and the like. The salvage cars are located in seven of the city fire stations, each one being allotted a certain zone to cover.

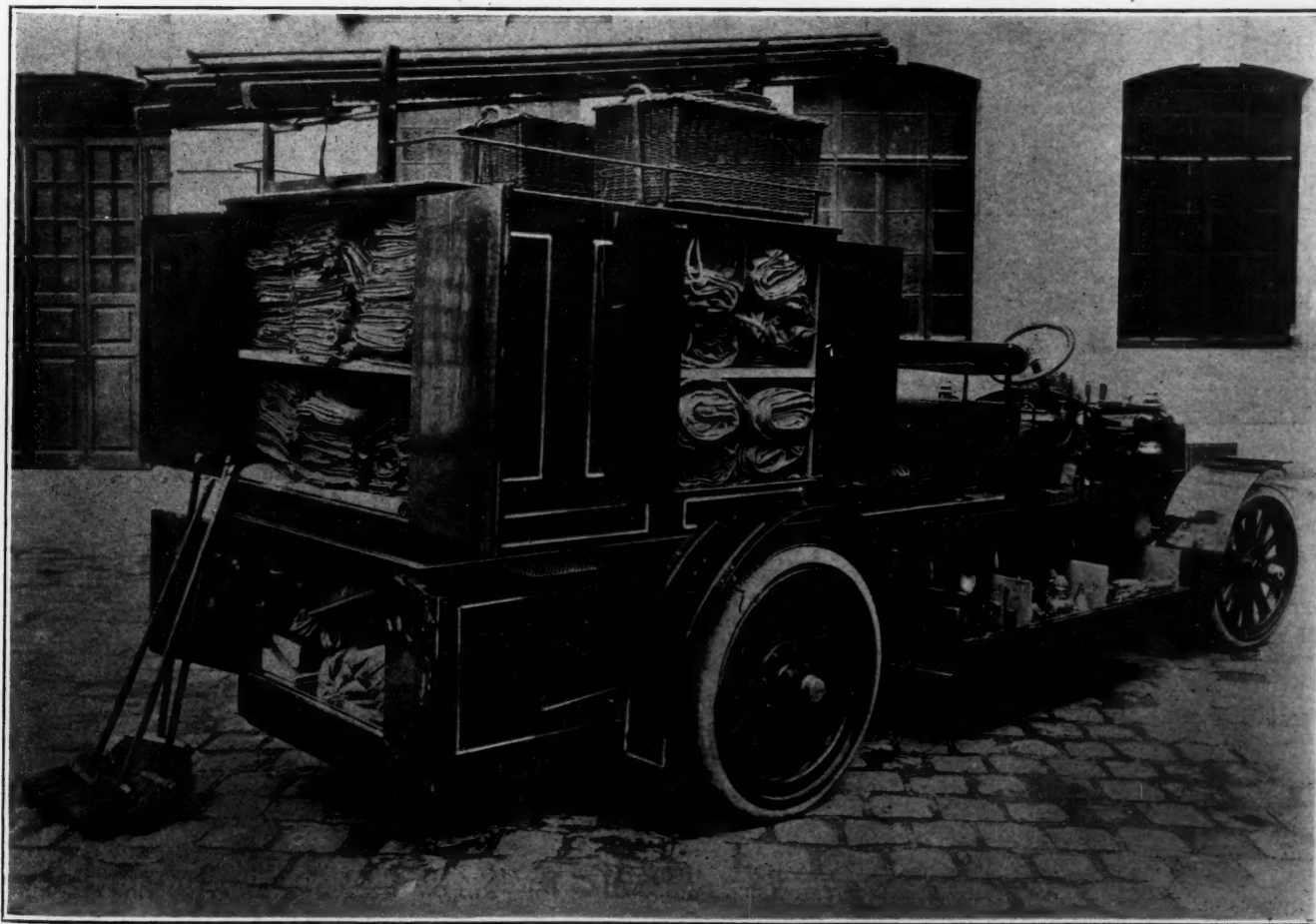
RAILWAY LOCOMOTIVES AS FIRE ENGINES.

In protecting railway property in and adjacent to the larger stations and yards, railway locomotives have been used as fire engines for some years. For instances, the Pennsylvania railroad states that during the past ten years this form of protection has developed until today there are 612 engines in yard and switching service equipped with special fire extinguishing apparatus and supervised by a well-organized private fire department at all of its larger terminals; this being in addition to systems of water mains and fire hydrants. The original arrangement consisted of a hose connection placed in the line conveying water from the ejector in the engine cab to the boiler; but this has been improved upon by providing a special form of extinguisher by which the

water from the locomotive tender is discharged through an ejector by means of the high steam pressures carried in locomotive boilers. The standard equipment for each and one-half inch unlined linen hose and a fifteen inch cast iron nozzle with a discharge opening of five-eighths of an inch, kept in a box under the running board of the engine—the hose being coiled in separate sections. With this equipment engines are enabled to throw a stream of water seventy feet.

The yards are divided into districts, each of which is designated by a number. When a fire is discovered a general alarm calling all engines in the particular district is sounded on air whistles installed on each switch tower. By a code of signals engineers and firemen of locomotives can tell immediately just where the fire is. To insure a prompt response yard masters and train directors are instructed to give the locomotive clear track in reaching the scene of fire, and in cases where locomotives are moving or shifting cars, the crews are instructed to uncouple the engines and proceed without delay to the fire immediately upon sounding of the alarm—on the way to the fire connecting up the hose and preparing to get into service immediately upon arrival.

The locomotive fire brigade organization in each yard is under the general supervision of the assistant yard master acting as chief and co-operates at all fires with the regular yard fire brigade, which is organized and regularly drilled at each point. The conductor of the shifting crews is designated as captain, and has direct charge of his own crew in all fire operations. To each member of the crew is assigned a special duty—to the flagman the unreeling and laying of hose line and making connections; to the two brakemen the moving of the hose line and directing the nozzle; the engineer and fireman—the operation of the pump and maintaining the required pressure.



PARISIAN SALVAGE CAR FOR PROTECTING GOODS AND FURNISHINGS.

FIRE APPARATUS IN AMERICAN CITIES

TABLE NO. 1.—HORSE-DRAWN APPARATUS

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
ALABAMA:											
Birmingham	8	1	1	2	1	1	1	1	..	..	..
Dothan	..	..	1	2	..	1	1	..	..	..	1
Gadsden	1	..	1	..	1	1	..	..	..	..	..
Jasper	..	..	1	2	1	1	..	..	..	..	2
Mobile	2	..	6	..	3	1	1	..	..	..	1
Montgomery	4	1	6	..	3	2	1	..	..	..	..
Selma	1	1	1	..	1	1	1	..	..	..	..
Talladega	..	..	2	2	..	1	..	..	..	..	..
ARIZONA:											
Bisbee	..	..	2	..	..	..	..	..	..	..	..
Douglas	1	..	(1)	..	1	..	..	..	..	..	..
Phoenix	(1)1	1	(1)1	(2)	..	(1)	..	..	..	..	..
Prescott	..	1	3	..	..	..	..	..	..	..	..
ARKANSAS:											
Batesville	2	..	1	..	..	1	..	1	..	1	1
Eureka Springs	..	..	1	3	3	..	..	..	..	..	..
Fordyce	..	..	1	..	..	..	..	..	..	..	..
Fort Smith	2	..	2	..	3	..	..	..	..	..	..
Helena	..	..	1	(1)	..	(1)	..	..	..	..	1
Hot Springs	(1)	..	3	..	1	..	(1)	..	..	..	..
Jonesboro	..	..	1	..	..	1	..	..	..	..	(1)
Little Rock	3	..	4	(2)	1	1	(1)	..	..	..	..
Paragould	..	..	1	..	..	..	..	..	..	..	1
Pine Bluff	..	..	3	..	..	1	..	..	..	..	..
Texarkana	1	..	1(2)	..	..	1a	..	..	..	..	..
Van Buren	..	..	1	..	..	..	..	..	..	..	..
CALIFORNIA:											
Alameda	1	1	3	..	2	1	..	..	..	..	..
Bakersfield	4	2	3(2)	1	..	..	1	..	..	..	..
Berkeley	2	1	2	..	2	..	..	..	..	..	2
Eureka	3	..	..	..	..	1	1	..	..	..	..
Fresno	5	3	5	..	2	1	1	..	..	..	1
Grass Valley	..	..	2	..	..	1	..	..	..	..	..
Hanford	2	..	1	2	1	1	..	..	..	..	..
Long Beach	1	..	..	..	1	..	..	..	..	..	1
Los Angeles	25(2)	(2)	..	..	28(4)	3	1	1	2	..	5
Marysville	2	..	1	2	1	1	..	..	..	..	..
Modesto	..	1	1	..	..	..	..	..	..	..	..
Oakland	15(3)	1	6(2)	1	8(2)	5	..	..	..	..	3
Pasadena	3	3(1)	3(1)	..	..	1	..	..	..	..	..
Petaluma	1	..	1	..	1	1	..	..	..	..	..
Redlands	..	..	..	3	..	..	..	..	..	..	..
Red Bluff	3	..	..	..	..	..	..	..	..	..	..
Salinas	1	..	1	..	..	1	..	..	..	..	..
San Bernardino	..	..	..	..	..	..	..	..	..	..	..
San Francisco	45	11	47	..	3	12	..	2	2	..	11
San Leandro	1	..	..	3	..	1	..	..	..	..	1
Santa Cruz	..	..	2	4	..	1	..	..	..	..	..
Santa Monica	..	..	..	..	1	..	..	..	..	..	..
Santa Rosa	1(1)	..	1(1)	..	..	..	..	..	..	..	..
Stockton	2(2)	1(1)	2(1)	..	..	1	1	..	..	..	(1)
Watsonville	1	..	1	2	..	1	..	..	..	..	..
Woodland	2	..	1	1	..	1	..	..	..	..	..
COLORADO:											
Boulder	..	..	1	..	2	..	..	..	..	..	..
Canon City	..	1	2	..	1	..	..	..	..	..	..
Colorado Springs	1	..	..	..	2	1	1	..	..	..	..
Grand Junction	..	1	(1)	..	..	..	..	..	..	..	..
Longmont	..	1	1	..	1	1	..	..	..	..	..
Pueblo	1	1	7	..	2	..	1	..	..	..	1
CONNECTICUT:											
Danielson	1	..	1	2	..	1	..	..	..	..	..
Derby	..	..	..	5	..	1	..	..	..	..	..
East Hartford	..	..	1	..	1b	..	..	..	..	..	..
Greenwich	1	..	2	..	..	1	..	..	..	..	..
Hartford	13	..	..	8	2	2	2	1	..	..	..
Meriden	(1)	..	2	1	1	1	..	..	..	..	1
Middletown	..	..	1	..	1	1	..	..	..	..	..
Naugatuck	..	..	4	..	1	1	..	..	..	..	..
New Britain	3	..	(1)	..	5	1	1	..	..	..	(1)
Norwalk	1	..	2	..	1	1	..	..	..	..	..
Norwich	2	..	4	1	3	1	1	..	..	..	1
Orange	..	..	(1)	(1)	..	..	..	..	..	..	..
Putnam	..	..	3	..	..	1	..	..	..	..	..
Shelton	..	..	..	..	1	1	..	..	..	..	..
So. Manchester	2	2	5	5	1	2	..	..	..	..	1
So. Norwalk	..	..	..	..	1	1a	..	..	..	..	..
Stamford	2(1)	..	..	1(1)	1	1	1	..	..	..	1
Stonington	1	..	2	3	..	1	..	..	..	..	..
Wallingford	1	..	..	..	2	1	..	..	..	..	..
Waterbury	3	..	3	..	2	1	1	..	..	..	..
DELAWARE:											
Wilmington	11	2	2	1	8	1	1	..	..	1	3
DISTRICT OF COLUMBIA:											
Washington	26(4)	6(2)	..	13(5)	17	..	13(2)	1	1	..	6(2)
FLORIDA:											
Gainesville	..	..	..	..	2	1	..	..	..	..	..
Jacksonville	2	..	6	3	1	3	1	..	..	..	..
Orlando	1	..	2	3	..	1	..	..	..	..	..
St. Petersburg	..	..	2	2	1	..	..	..	..	..	..
Tampa	4	1	3	2	2	..	1	..	..	..	..
GEORGIA:											
Americus	1	..	2	..	1	1	..	..	..	..	1
Athens	..	..	2	..	2	1	..	..	..	..	..
Atlanta	9	2	9	3	3	5	1	..	..	..	2

For foot notes, see page 431.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
GEORGIA (Continued):											
Augusta	3	1	2	..	1	1	1	..	..	..	1
Brunswick	1	..	2	..	..	1	..	..	..	..	1
Columbus	3	1	2	..	3	1	..	..	..	..	1
Cordele	..	..	..	..	1	1	..	..	..	..	..
Fort Valley	1	..	1	1	..	..	..	..	..	..	..
Hawkinsville	1	1	1	2	1	1	..	..	..	..	..
Newnan	..	..	1	..	1	..	..	..	..	..	..
Rome	..	..	3(1)	..	..	..	1	..	..	..	..
Sandersville	..	..	..	3	..	1	..	1	..	..	..
Savannah	(3)	(1)	..	..	..	3(1)	2	..	..	..	1(1)
Thomasville	1	..	1	1	..	..	..	..	..	..	..
Valdosta	..	..	..	..	1	1	..	..	..	..	..
Waynesboro	..	..	..	3	..	1	..	1	..	..	..
ILLINOIS:											
Aurora	(1)	..	2	..	2	(1)	1	..	..	..	1
Bloomington	2	..	4	..	..	1	..	..	..	..	2
Blue Island	1	..	2	..	1	1	..	..	..	..	..
Canton	..	1	1(1)	1	..	1(1)	..	..	..	..	..
Carlinville	..	..	2	2	..	1	..	..	..	..	..
Charleston	..	..	2	1	..	..	..	..	..	..	..
Chicago	126	17	115	..	..	26	17	1	6	..	21
Danville	..	2	6	..	..	1	..	..	..	..	1
Dekalb	..	..	..	..	..	1	..	..	..	..	..
Du Quoin	..	2	1	..	..	1	..	..	..	..	..
Dwight	..	..	..	1	..	1c	..	1	..	..	..
East St. Louis	3	..	3	3	..	..	1	..	..	..	3
Evanston	2	1	2	..	2	2	1	..	..	..	1
Galena	..	1	1	3	1	1	..	..	..	..	..
Harrisburg	..	..	1	2	..	1	..	1	..	..	..
Harvard	1	1	3	1	..	1	..	1	..	..	..
Harvey	..	..	..	..	1b	..	..	..	..	..	..
Hoopeston	1	..	1	2	2	1	..	..	..	..	..
Joliet	2	2(1)	4	..	1	1	1	..	..	..	1
Lincoln	..	1	1	..	..	1	..	..	..	..	1
Macomb	..	3	1	1	..	1	..	..	..	..	..
Marion	..	..	2	..	1	..	..	..	..	..	..
Mattoon	..	1b	1	..	2	..	..	..	..	..	1
Metropolis	..	..	1	1	..	1	..	..	..	..	..
Moline	..	..	4	1	2	1	..	..	..	..	1
Mt. Carmel	..	..	1	1	2	..	..	1	..	..	..
Murphysboro	1	..	1	1	1	..	..	..	..	..	1
Naperville	..	..	..	..	1	1	..	..	..	..	..
Pana	..	..	1	(3)	..	..	..	..	..	..	..
Peoria	2(1)	1	8(1)	(2)	2	2(1)	1	..	..	..	3(1)
Peru	..	..	1	..	..	1	..	..	..	..	..
Pinckneyville	..	..	1	2	..	1	..	..	..	..	..
Princeton	..	..	2	..	..	..	..	..	..	..	..
Rockford	5	..	..	..	4	1	..	..	..	..	2
Springfield	3(1)	2	..	4	3	1	1	..	..	..	2
Urbana	..	1b	1	..	1	..	..	..	..	..	1
Vandalia	..	..	1	..	..	..	..	..	..	..	..
Waukegan	..	..	(1)	..	..	1	..	..	..	..	..
Wilmette	..	1	1	..	1-1b	..	..	..	..	..	..
INDIANA:											
Anderson	..	..	3	..	1	1	..	..	..	..	1
Attica	..	..	3	2	..	..	..	..	..	..	..
Clinton	..	..	1(1)	..	..	(1)	..	..	..	..	..
Covington	..	..	..	2	..	..	..	..	..	..	..
Elwood	..	..	1	..	1	1	..	..	..	..	..
Evansville	5	1	12	..	2	1	1	..	..	..	3
Fort Wayne	8	1	3	..	5	1	2	..	..	..	2
Gas City	..	..	..	1	1	..	..	..	..	..	..
Green Castle	..	..	2(1)	..	..	1	..	..	..	..	..
Huntington	2	..	..	..	2	1	..	..	..	..	..
Kokomo	(1)	..	2	..	1	1	..	..	..	..	1
Kendallville	..	..	..	..	1b	..	..	..	..	..	..
Lafayette	(1)	(1)	2	1(1)	..	1	..	..	..	..	1
La Porte	..	..	1	(4)	..	1(1)	..	..	..	..	1
Lebanon	..	..	1	..	..	..	..	..	..	..	..
Logansport	(1)	5	3	..	3	1	..	..	..	..	1
Marion	..	..	3	1	2	2	..	..	..	..	1
Martinsville	..	..	2	..	..	1	..	..	..	..	..
Mishawaka	..	..	..	1	1	1	..	..	..	..	..
Mt. Vernon	..	..	..	..	..	1	..	..	..	..	..
Muncie	1(1)	..	(1)	..	3	..	1	..	..	..	..
New Albany	..	..	2	3	..	1	..	..	..	..	1
North Manchester	..	1	1	1	..	..	..	..	..	..	..
Peru	2	1	3	1	4	1	..	..	1	..	..
Plymouth	..	..	1	..	..	1	..	..	..	..	..
Portland	..	..	1	..	1	1	..	..	..	..	..
Princeton	..	..	..	..	1	..	..	..	..	..	..
Rensselaer	..	..	..	..	1	..	..	..	..	..	..
Rochester	..	1	..	..	1	..	1	..	..	..	..
Shelbyville	..	..	2	..	..	1	..	..	..	..	..
Tell City	..	..	..	2	..	..	..	..	..	..	..
Valparaiso	..	..	1	1	..	1	..	..	..	..	..
Vincennes	..	..	2	..	1	1	..	..	..	..	1
Wabash	..	..	2	1	..	2	..	..	..	..	1
IOWA:											
Ames	..	..	1	1	..	..	..	..	..	..	..
Atlantic	..	..	1	(3)	..	1	..	..	..	..	..
Burlington	(1)	..	3	4(1)	1	..	1	..	..	..	1
Clarinda	..	1	1	1	..	1	..	..	..	..	..
Cherokee	..	..	1	..	1	1	..	..	..	..	1
Dubuque	4	1	1	2	3	1	1	..	..	..	..
Creston	..	..	7(1)	..	1	1	..	..	..	..	1
Davenport	..	3	8(2)	..	5	2	1	..	..	..	3
Des Moines	..	..	1	3	2	1	..	..	..	..	..
Fairfield	..	..	1	..	2	..	..	1	..	..	..
Ft. Dodge	..	..	1	..	1	(1)	..	..	..	..	..
Indianola	..	..	..	2	2	..	..	1	..	..	..
Iowa City	..	..	1	..	..	1	..	..	..	..	1
Iowa Falls	..	..	2	1	..	1b	..	..	..	..	..
Marengo	..	..	2	2	1	1	..	1	..	..	..
Marshalltown	..	..	..	..	1b	(1)	..	..	..	..	..
Nevada	..	1	2	..	1	..	..	1	..	..	..
Osage	..	..	2	3	..	1	..	..	..	..	..
Shenandoah	..	..	..	..	..	..	..	..	..	..	..

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies
IOWA (Continued):											
Sioux City	1	2	5	..	2	1	1	..	..	..	..
Waterboro	1	(1)	..	..	2	..	1	..	..	..	..
Winterset	1	1	1	..	..	1	..	..	..	..	..
KANSAS:											
Abilene	..	..	..	2	1	..	..	..	..	..	..
Atchison	2	..	4	..	..	..	1	..	..	..	1
Blue Rapids	..	..	..	..	..	1	..	..	..	..	..
Burlingame	1	1	1	1	..	1	..	..	..	..	..
Coffeyville	..	..	2	..	..	1	..	..	..	..	1
El Dorado	..	..	1	3	..	1	..	..	..	..	..
Fort Scott	..	2	..	1	1	..	..	..	..	..	1
Galena	2	..	1	5	..	1	..	1	..	..	..
Hoisington	..	..	..	..	..	1	..	..	..	..	..
Molton	..	..	1	..	..	1a	..	..	..	..	..
Hutchinson	..	..	1	..	..	1	..	..	..	..	..
Independence	..	..	1	1	..	..	..	..	..	..	..
Iola	..	..	..	1	1	1	..	..	..	..	..
La Harpe	..	..	..	2	..	..	..	1	..	..	..
Leavenworth	..	..	2	1	1	2	..	..	..	..	..
McPherson	..	..	..	..	1	..	..	..	..	..	..
Olathe	..	..	1	..	..	..	..	..	..	..	..
Ottawa	1	..	2	1	..	1	..	..	..	..	..
Parsons	..	1	2	..	1	1	1	..	..	..	1
Pittsburg	..	..	2	..	..	1	..	..	..	..	1
Salina	..	(1)	(1)	..	..	..	..	..	..	..	..
Topeka	2	2	3	(2)	(2)	1	1	..	..	..	(1)
KENTUCKY:											
Bowling Green	..	..	..	..	2	1	..	..	..	..	1
Carlisle	1	..	1	1	..	1	..	..	..	..	..
Carrollton	1	..	1	..	..	..	..	..	..	..	..
Covington	2(1)	1	4	..	..	..	..	..	..	..	1
Cynthiana	..	..	1	2	..	1	..	..	..	..	..
Danville	..	1	..	2(1)	..	..	..	1	..	..	..
Lexington	..	(1)	(2)	..	4	1	..	..	..	..	1
Louisville	21(2)	..	1	14(4)	6	2(1)	4	1	..	..	5
Nicholasville	..	..	1	1	..	1	..	..	..	..	..
Paducah	1	..	..	1	4	1	1	..	..	..	1
Princeton	2	..	..	1	..	1	..	..	..	..	..
Richmond	..	..	1	1	..	..	..	..	..	..	..
Shelbyville	1	..	1b	..	..	..	..	..	..	..	..
LOUISIANA:											
Baton Rouge	..	..	4	..	..	..	1	..	..	..	..
Cranby	..	..	1	2	..	1	..	1	..	..	..
New Orleans	31(4)	5(6)	26	8	1	8(1)	2	1	..	5	7
Thibodaux	1	..	1	3	1	1	..	..	..	..	..
MAINE:											
Auburn	1	1	3	2	1	2	..	..	..	..	..
Augusta	1	..	1(1)	..	1	1	..	..	..	..	1
Bangor	3	2	6	..	2	2	1	1	..	..	1
Belfast	1	1	2	2	..	1	..	..	..	..	..
Biddeford	3	..	3	..	1	1	..	..	..	..	1
Brunswick	2	..	2	5	..	1	..	..	..	..	..
Gardiner	3	..	7	2	..	1	..	..	..	..	..
Hallowell	2	..	1	4	6	1	..	..	..	..	..
Lewiston	2	1	4	2	..	1	1	..	..	..	..
Pittsfield	..	..	..	..	..	1	..	..	..	..	..
Rumford	..	1	..	..	1	1	..	..	..	..	..
MARYLAND:											
Annapolis	1	..	2	(1)	..	2	..	..	..	..	..
Baltimore	37(6)	(1)	..	(14)	35(21)	6	12(4)	2	2	..	8(4)
Crisfield	1	..	1	4	..	1	..	..	..	..	..
Cumberland	..	..	..	5	3	..	1	..	..	..	..
Frostburg	..	..	..	4	1	2	..	..	..	..	..
MASSACHUSETTS:											
Adams	..	1	2	5	..	2	..	..	..	..	..
Attleboro	..	..	3	1	1	3	..	..	..	..	..
Beverly	4	1-1b	6	..	..	2	..	..	..	..	1
Boston	45(7)	13(5)	46	..	..	23(7)	5(1)	3(1)	3	..	16(5)
Bridgewater	1	..	2	..	..	1	..	..	..	..	1
Brookton	5(1)	1(2)	4(2)	..	..	1(1)	2	..	..	..	..
Brookline	2	1	3	..	7	1	1	..	..	..	1
Cambridge	8(1)	2	7	..	2	5(1)	1	..	..	..	2
Chelsea	4	1	5	..	..	1	..	..	..	..	1
Chicopee	1	..	3	2	1	3	..	..	..	..	1
Dalton	..	..	1	4	1	1	..	..	..	..	..
Danvers	..	..	5	..	1	1	..	..	..	..	..
Fitchburg	..	1	3	..	2	2(1)	1	..	..	..	1
Gloucester	6	(2)	6	..	3	3	..	..	1	..	1
Greenfield	..	..	2	1	2	1	..	..	..	..	..
Haverhill	5(2)	3(2)	5(1)	..	..	2(1)	1	..	..	..	..
Hingham	1	..	1	..	2	1	..	..	..	..	..
Holyoke	7	2	4	..	1	2	2	1	..	..	1
Lawrence	4	2	4	..	4	3	1	1	..	..	2
Lowell	6(2)	2(1)	12	(1)	..	3	2	..	..	..	2
Lynn	8(2)	3(1)	6(2)	..	1	3(1)	1	..	..	..	2
Marblehead	2	1	2	4	..	1	..	..	..	..	..
Marlboro	..	..	4	..	1	2	..	..	..	..	1
Maynard	..	..	1	..	..	1	..	..	..	..	..
Medford	1	(1)	2(1)	..	3	1	..	..	..	..	1
Milford	2	..	3	..	1	1(1)	..	..	..	..	1
New Bedford	8	..	7	..	3	..	3	..	..	..	1
Newburyport	4	..	5	..	..	1	..	..	..	..	1
Newton	3	1(1)	4(1)	..	3	1a	1	..	..	..	2
North Adams	..	..	1	..	1	1	..	..	..	..	..
North Attleboro	..	..	3	..	1	3	..	..	..	..	..
North Brookfield	1	1	1	1	..	1	..	..	..	..	..
Orange	1	..	1	..	1	1	..	..	..	..	..
Peabody	2	2	6	1	1	1	..	..	..	..	1
Pittsfield	4(1)	..	..	..	3	2(1)	..	..	..	..	1
Plymouth	4(1)	2	2	1	..	2	..	..	..	..	..
Quincy	1	..	3	..	3	3	..	..	..	..	..
Reading	1	..	5	..	..	1	..	..	..	..	..
Salem	4	1	4	..	1	1	1	..	..	..	2
Somerville	4	..	3	..	4	3	..	..	..	..	..
Springfield	8	..	..	..	5	3	1	..	..	..	..
Swampscott	1	3(1)	2	..	1	1	..	..	..	..	1

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
MASSACHUSETTS (Continued):											
Taunton	3	(1)	2	..	4	2(1)	1	1	..	..	1
Wakefield	2	..	4	..	1	1	..	..	..	..	..
Waltham	2	1	4	..	1	1	1	..	..	..	1
Ware	1	..	1	4	..	1	..	..	..	..	1
Westfield	..	1(1)	1(2)	..	..	1	..	..	..	..	1
Worcester	8(1)	3	17	..	1	4(1)	2	1	..	..	3(2)
MICHIGAN:											
Adrian	(2)	..	3	..	2	1a	..	..	..	..	..
Alma	2	..	1	1	..	..	..	..	..	..	..
Alpena	2	..	6	..	3	1	..	..	2	..	..
Ann Arbor	1	..	2	..	1	1	1	..	..	..	1
Battle Creek	2	..	1	..	4	..	1	1	..	..	..
Benton Harbor	1	..	1	..	1	1	1	..	1d	..	..
Bessemer	..	..	2	1	2	1	..	1	..	..	..
Big Rapids	..	..	..	..	1	1	..	..	..	..	..
Detroit	27	..	3	..	27	2	11	1	2	..	..
Escanaba	..	..	1	3	1	1	..	..	..	..	1
Fenton	..	..	1	..	..	1	..	..	..	..	..
Flint	1	..	1(3)	..	1	2	..	..	..	..	1
Grand Rapids	12(1)	..	9	..	..	2	1	..	..	..	2
Jackson	3	..	..	(2)	3	1	1	..	..	..	1
Kalamazoo	4	..	1	(1)	5	2(1)	1	..	..	..	(1)
Lansing	..	..	(1)	..	..	..	..	..	..	..	..
Lapeer	1	..	1	2	..	1	..	..	..	..	..
Ludington	..	..	1	(2)	1	1	..	..	..	..	..
Manistique	2	..	..	..	..	..	..	..	..	..	..
Marshall	1	..	(1)	..	1	1	..	..	..	..	..
Menominee	1	..	3	1	..	1	..	..	1	..	1
Monroe	1	..	2	..	..	1	..	..	..	..	..
Mt. Clemens	1	..	1	1	1	1	..	..	..	..	..
Muskegon	1	..	3(1)	..	3	1	(1)	..	..	..	1
Otsego	..	..	1	3	..	1	..	..	..	..	..
Petoskey	..	..	3	1	..	..	..	..	..	..	..
Pontiac	1	..	2	1	1	..	1	..	..	..	1
Port Huron	1	..	3	1	1	1	..	..	1d	..	1
St. Joseph	1	..	1	1	..	1	..	..	..	..	..
Three Rivers	..	..	..	..	1	(1)	..	..	..	..	..
Traverse City	2	2	2	4	..	2	..	..	..	..	..
MINNESOTA:											
Albert Lea	..	..	2	..	1	1	..	..	..	..	..
Alexandria	..	2	..	2(1)	..	1	..	..	..	..	..
Anoka	..	..	1	1	..	1-1a	..	..	..	..	..
Bemidji	1	..	2	2	..	1	..	1	..	..	..
Brainerd	..	..	2	..	..	1	..	..	..	..	..
Cloquet	..	2	2	..	..	1	..	..	..	..	..
Detroit	..	1	..	2	..	1	..	1	..	..	..
Faribault	1	..	1	4	1	1	..	..	..	..	..
Hastings	1	..	..	3	..	1	..	..	..	..	..
Little Falls	2	..	4	4	6	1	..	..	..	..	1
Marshall	1	..	1	..	1	1	1	..	..	..	..
Minneapolis	24(1)	8(3)	6	11(5)	14	7	4	1	..	..	8(6)
New Ulm	(1)	..	2	..	..	..	2	..	..	..	..
Owatonna	1	..	1	..	1	1	..	..	..	..	..
Red Wing	2	..	3	..	..	1-1c	..	..	..	..	1
Rochester	..	..	2	..	..	1	..	..	..	..	1
St. Cloud	..	..	1	..	..	1	..	..	..	..	..
St. Paul	22	3	22	2(3)	..	7	4	1	..	..	2
Sauk Center	2	1	1	..	..	1	..	..	..	..	..
Stillwater	1	..	1	1	..	1	..	..	..	..	..
Thief River Falls	1	..	1	2	1	1	..	1	..	..	..
Two Harbors	..	1	1	2	1	1	..	..	..	..	..
Winona	2	1	4	1	..	2	1	..	..	..	1
MISSISSIPPI:											
Aberdeen	1	..	1	4	..	1	..	..	..	..	..
Greenville	..	..	..	..	3(1)	1	..	..	..	..	1
Jackson	2	..	2	..	2	1	1	..	..	..	1
MISSOURI:											
Cameron	..	..	..	2	..	1	..	..	..	..	..
Carrollton	..	..	1	..	..	1	..	..	..	..	..
Carthage	..	..	1	..	..	..	..	..	..	..	1
Caruthersville	..	..	1	..	..	1	..	..	..	..	..
Chillicothe	..	..	1	..	..	..	..	..	..	..	..
Clinton	..	..	1	..	..	..	..	..	..	..	..
Fulton	..	..	1	1	..	1	..	..	..	..	..
Hannibal	..	..	2	3	2	..	..	..	..	..	..
Independence	..	..	2	..	2	(1)	..	..	..	..	1
Jefferson	..	..	1	..	..	1	..	..	..	..	..
Kansas City	10(2)	1	18	3(3)	3	5(1)	3(1)	2	..	..	6
Kirksville	..	..	1	..	3	1	..	..	..	..	..
Lamar	2	..	2	2	..	..	..	..	..	..	..
Lebanon	..	..	1	..	..	1	..	..	..	..	..
Lexington	..	..	1	1	1	..	..	..	..	..	..
Maryville	..	..	2	1	..	..	..	..	..	..	..
Monroe City	1	..	1	1	1	1	..	..	..	..	..
Pleasant Hill	1	1	..	1	1	..	..	..	..	..	..
Princeton	..	..	1	1	..	..	1(1)	1	..	..	(2)
St. Joseph	2	..	10(2)	1(1)	2	8	9	2	..	..	14
St. Louis	49	..	49	..	43	1	..	..	..	..	..
Sedalia	1	..	2	(1)	..	..	..	..	..	..	..
Unionville	..	..	1	1	..	..	..	..	..	..	..
Warrensburg	..	..	2	..	..	..	..	..	..	..	..
MONTANA:											
Bozeman	1	..	..	..	1	..	..	..	..	..	..
Livingston	..	..	2(1)	..	1	1	..	..	..	..	..
Missoula	2	1	2	2	..	1	..	..	..	..	1
Red Lodge	..	..	..	..	1	1	..	..	..	..	..
NEBRASKA:											
Ashland	..	..	..	3	..	1	..	..	..	..	..
Beatrice	..	..	1	..	..	..	..	..	..	..	..
Columbus	..	..	..	..	..	1	..	..	..	..	..
David City	..	..	2	..	..	1	..	..	..	..	..
Grand Island	..	..	..	1	1	..	..	..	..	..	..
Hastings	..	..	1	1	..	1	..	..	..	..	..
Kearney	..	..	..	..	4	1	..	..	..	..	..
Lincoln	1	(1)	3(1)	..	2	1	1	..	..	..	(1)
Nebraska City	1	1	1	1	1	1	..	..	..	..	..

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
NEBRASKA (Continued):											
Omaha	4(1)	(2)	8	..	1	5(1)	1(1)	1	..	..	2(1)
Pawnee City	1	..	5	2	1	1	..	..	..	..	1
South Omaha	1	..	1	..	1	1	..	..	..	..	1
Wahoo	..	1	1	..	1	..	..	..	..	..	1
York	..	1	1	..	1	..	..	..	..	..	1
NEVADA:											
Reno	2(1)	1	1	..	1	1	..	..	..	..	..
NEW HAMPSHIRE:											
Berlin	1	..	3	1	1	1	..	..	..	..	1
Concord	4	1	6(1)	(1)	..	1(1)	..	..	..	..	1
Franklin	1	..	2	..	..	1	..	..	..	..	1
Laconia	1	1	4	1	2	2	..	..	..	..	1
Manchester	7	1	10	..	3	5	1	..	..	1	1
Nashua	4	1	4	..	..	2	..	..	..	..	2
Newport	1	..	1	3	..	1	..	..	..	..	..
Rochester	..	..	2	3	..	2-1a	..	..	..	..	..
NEW JERSEY:											
Atlantic City	11	1	..	1	8	1	3	..	..	..	3
Bayonne	6(1)	..	2(1)	..	3	1(1)	1	..	..	..	2
Bordentown	1	1	1	3	..	1	..	..	..	..	1
East Orange	..	..	..	..	5	1(1)	1	..	..	..	1
Elizabeth	6	..	1	3	2	1	1	..	2e	..	1
Englewood	..	..	3b	..	..	2	..	..	..	..	..
Freehold	2	..	..	3(1)	..	1	..	..	..	..	..
Glen Ridge	..	..	1	..	..	1	..	..	..	..	..
Hackensack	2	2	2	..	..	1	..	..	..	..	..
Hoboken	5(2)	1	1(2)	..	4	..	2(1)	..	..	..	1
Irvington	..	..	1	..	..	1	..	..	..	..	..
Jersey City	16	2	11	..	2	7	5	..	..	..	7
Kearny	..	..	4	..	1	2	..	..	..	..	..
Key Port	..	1	..	4	..	2	..	..	..	..	..
Lambertville	2	1	..	3	1	1	..	..	..	..	..
Madison	..	..	1	1	..	1	..	..	..	..	..
Morristown	2	..	2	1	..	..	..	..	..	..	..
Newark	21(3)	..	3(1)	..	19(2)	5(2)	3	1	..	..	6
Passaic	5	..	..	..	..	1	..	..	..	..	..
Paterson	11(3)	..	5	..	3	1	1	..	..	..	..
Phillipsburg	1	1	4	4(1)	..	1	..	..	..	..	..
Ridgewood	..	1	2	..	..	1	..	..	..	..	..
South Orange	..	..	1	..	..	1	..	..	..	..	..
Summit	..	..	1	..	..	1	..	..	..	..	..
Westfield	..	..	(1)	..	1	..	..	..	..	..	1
West Orange	1	1	3	..	1	1	..	..	..	..	..
Wharton	..	..	1	1	..	1	..	..	..	..	..
Woodbridge	..	..	1	..	..	1	..	..	..	..	..
Woodbury	1	..	..	..	2	1	..	..	..	..	..
NEW MEXICO:											
Albuquerque	..	..	..	1	1(1)	1	..	..	..	..	..
E. Las Vegas	..	..	1	1	1	1	..	..	..	..	..
Raton	..	..	1	1	..	..	..	..	..	..	..
Roswell	1	..	2	..	..	1	..	..	..	..	1
NEW YORK:											
Albany	11	..	12	..	10	5	4	..	..	..	3
Amsterdam	1	..	..	2	4	1	..	..	..	..	1
Athens	3	..	..	..	..	1	..	..	..	..	..
Auburn	2(1)	..	2	..	3(1)	1	1	..	..	..	..
Binghamton	2(1)	..	1(2)	..	3	1	1	..	..	..	1(1)
Canton	1	..	2	2	..	..	..	..	..	..	..
Cohoes	4(1)	..	2	1	4	..	2	..	..	..	1
Dobbs Ferry	..	..	1	..	1	..	1	..	..	..	..
Dunkirk	..	..	2	..	1	1	..	..	..	..	..
Elmira	6	..	..	8	5	1	1	..	..	..	1
Frankfort	1	..	..	..	..	1	..	..	..	..	..
Fredonia	..	..	..	..	..	1	..	..	..	..	..
Fulton	2	..	2	2	..	1	..	..	..	..	..
Glens Falls	1	1	2(1)	..	..	1	1	..	..	..	..
Gloversville	..	..	1	..	2	1	1	..	..	..	..
Goshen	..	..	1	..	1	..	..	..	..	..	..
Gowanda	1	..	..	..	..	1	..	..	..	..	..
Green Island	1	..	2	..	..	..	..	..	..	..	..
Herkimer	1	..	..	4	..	1	..	..	..	..	..
Homer	..	..	..	..	..	1	..	..	..	..	..
Hoosick Falls	1	..	3	3	1	1	..	..	..	..	1
Hornell	..	..	1	..	1	1	1	..	..	1	1
Ithaca	2	..	2	1	4	1	1	..	..	..	1
Jamestown	2	..	1	..	2	2	1	..	..	..	..
Johnstown	..	..	1	6	5	1	..	..	..	..	1
Kingston	..	..	..	..	..	2	..	..	..	..	..
Le Roy	..	1	1	..	..	1	..	..	..	..	..
Lowville	1	..	1	2	..	1	..	..	..	..	..
Malone	(1)	1	2	2	..	1	..	..	..	..	..
Middletown	1	..	2	2	1	2	..	..	..	..	..
New York	158	..	165	..	1	16	60	4	10	..	42
Newark	..	1	..	..	1	1	..	..	..	..	..
Newburgh	4	1	4	..	2	1	1	..	..	..	1
New Rochelle	2	..	1	..	4	1	1	..	..	..	..
Niagara Falls	1	..	(1)	..	5(1)	2	1	..	..	..	(1)
Ogdensburg	2	..	1	..	2	1	..	..	..	..	..
Oneida	1	..	1	2	1	1	..	..	..	..	..
Oswego	3	2	2	2	2	1	1	..	..	..	1
Owego	1	1	1	..	1	2	..	..	..	..	..
Peekskill	..	..	1	(2)	2	1	..	..	..	..	..
Penn Yan	1	1	6(2)	6	..	1	..	..	..	..	..
Plattsburg	1	..	1	..	1	1	..	..	..	..	..
Potsdam	1	..	1	1	..	1	..	..	..	..	..
Poughkeepsie	2	..	1	..	5	..	2	1	..	..	..
Rochester	15	..	3	..	15	4	3	1	..	..	2
Salamanca	1	..	..	..	1	1	..	..	..	..	..
Saratoga Springs	1	..	(2)	(1)	..	..	(1)	..	..	..	1
Schenectady	4	..	1	..	8	2	2	..	..	..	1
Southampton	2	..	1	..	..	1	..	..	..	..	..
Syracuse	10	..	9	..	3(1)	1	4	1	..	..	1
Troy	11	..	2	..	9	3	3	..	..	..	3
Utica	6	1	4(1)	..	4	1	1	..	..	..	3
Yonkers	..	..	(2)	..	7	3	1	..	..	..	3(1)

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
NORTH CAROLINA:											
Charlotte	2	..	1	..	3	1	..	..	..	..	1
Elizabeth City	2	..	2	(1)	..	1	..	..	..	..	..
Greensboro	2	..	4	1	1	..	1	..	..	..	1
Greenville	2	1	1	5	..	1	..	..	..	..	..
Henderson	..	1	3	..	..	1	..	..	..	..	..
Hickory	..	..	2	..	..	..	..	..	..	..	..
New Bern	2	..	4(3)	..	..	1	..	..	..	..	..
Raleigh	1	..	3(1)	..	..	1	..	..	..	..	..
Washington	1	..	3	3	..	1	..	..	..	..	..
NORTH DAKOTA:											
Bismarck	..	..	..	..	1	1	..	..	..	..	..
Dickinson	1	..	..	..	..	..	..	..	..	..	..
OHIO:											
Akron	3	..	..	..	5-1b	..	2	..	..	..	1
Alliance	..	..	..	..	1	..	..	..	..	..	..
Ashtabula	2	1	4	..	..	1	..	..	..	..	..
Bellaire	..	..	1	..	1(1)	..	..	..	..	..	..
Bellefontaine	..	..	3	..	..	1	..	..	..	..	..
Bellevue	1	..	1	2	..	1	..	..	..	..	..
Bucyrus	1	..	1	1	..	1	..	..	..	..	1
Celina	..	..	1	1	..	1	..	..	..	..	..
Circleville	..	..	1	1	..	1	..	..	..	..	..
Cleveland	33(3)	4	38(4)	..	2	7	..	1	2	..	12
Columbus	18	1	7	..	11	5a	4	1	..	..	..
Conneaut	..	..	3	..	..	1a	..	..	..	..	1
Defiance	1	..	1	1	1	1a	..	..	..	..	..
Elyria	1(1)	..	..	..	1(1)	..	1	..	..	..	..
Gallipolis	..	..	2	2	..	1	..	..	..	..	..
Greenfield	..	..	..	2	1	1	..	..	..	..	..
Hicksville	..	..	2	..	..	1	..	..	..	..	..
Kenton	..	..	1	..	..	1	..	..	..	..	..
Lebanon	..	..	1	..	..	1	..	..	..	..	..
Lima	2	..	5	..	2	1	1	..	..	..	1
Lorain	2	..	1(1)	..	5	1(1)	..	..	..	..	..
Mansfield	(1)	..	..	..	5	1	..	..	..	..	1
Marietta	3	1	2	..	..	1	1	..	..	..	..
Marion	(1)	..	..	..	2	1	..	..	..	..	1
Middletown	..	..	2	..	..	..	1	..	..	..	..
Mt. Vernon	..	..	2	..	..	1	..	..	..	..	1
Napoleon	1	..	..	2	1	1	..	..	..	..	..
Newburgh	..	..	1	..	..	..	..	..	..	..	1
Norwalk	..	1	1(1)	(1)	..	1	..	..	..	..	..
Norwood	1	..	2	..	1	1	..	..	..	..	..
Oberlin	..	..	1	..	1	1	..	..	..	..	..
Ottawa	2	..	..	2	1	1	..	..	..	..	1
Portsmouth	2	..	..	2	..	..	1	..	..	..	..
Rockport	..	..	6	..	..	1	..	..	..	..	..
St. Bernard	..	..	..	..	1	1	..	..	..	..	1
Tiffin	(1)	..	..	1	1	1	..	..	..	..	1
Toledo	14	..	..	..	17	8	1	1	..	..	4
Toronto	..	..	..	1	..	..	..	..	..	..	..
Urbana	..	1	2	..	..	..	..	..	..	..	..
Versailles	1	..	..	..	2	1	..	..	..	..	..
Warren	1	..	1	..	..	1	..	..	..	..	1
Wauseon	2	..	..	2	..	1	..	..	..	..	..
Youngstown	4	..	3	..	4	2	1	..	..	..	..
OKLAHOMA:											
Blackwell	..	..	..	2	1	..	..	..	..	..	..
Chandler	..	..	1	..	..	..	..	..	..	..	1
Elk City	..	..	1	..	..	..	..	..	..	..	..
Enid	1	..	..	..	1	..	1	..	..	..	..
Mangum	..	..	1	..	..	1	..	..	..	..	..
McAlester	..	..	2	..	1	1	..	..	..	..	1
Muskogee	3	1	3	..	1	1	1	..	..	..	..
Nowata	..	..	1	..	..	..	..	..	..	..	..
Okahoma City	7(2)	..	1f	..	8	3	1(1)	1	..	..	2
Pauls Valley	..	1	1	1	1	..	..	..	..	..	..
Perry	..	..	1	..	..	1c	..	..	..	..	..
Shawnee	..	..	2	..	1	(1)	..	..	..	..	1
Sulphur	..	..	1(1)	..	..	..	..	..	..	..	..
Tahlequah	..	..	1b	..	..	..	..	..	..	..	..
Tulsa	1	..	1	..	1	1a	..	..	..	..	..
Vinita	..	..	1	..	1	1a	..	..	..	..	..
Wynne Wood	..	..	1	..	..	1	..	..	..	..	..
OREGON:											
Astoria	2	1	2c	..	..	1	1	..	..	..	1
Baker	..	..	..	..	1	..	..	..	..	..	..
Portland	19	4	16	..	5	4	1	..	1	..	(6)
PENNSYLVANIA:											
Allentown	6	2	9	1	(2)	2	..	..	..	..	..
Altoona	6	..	4	1	2	1	1	..	..	..	1
Ashley	1	..	1	2	..	..	..	..	..	..	..
Beaver	..	..	1	..	..	1	..	..	..	..	..
Beaver Falls	1	..	3	1	1	1	..	..	..	..	1
Bloomsburg	1	..	..	6	..	..	..	..	..	..	..
Bristol	1	..	1	..	..	1	..	..	..	..	..
Brookville	..	..	..	..	..	1	..	..	..	..	..
Butler	..	..	2	1	1	1	..	..	..	..	..
Carbondale	3	..	..	..	..	..	..	..	..	..	..
Carlisle	3	1	1	3	..	1	1	..	..	..	..
Coatesville	2	3	3	..	..	1	..	..	..	..	..
Connellsville	..	..	1	..	1	..	..	..	..	..	..
Conshohocken	1	..	..	1	2	..	..	..	..	..	..
Corapolis	..	..	1(1)	1	..	..	..	..	..	..	..
Dunmore	..	..	3	2	1	..	..	..	..	..	..
Easton	4	1	1	3	4	2	1	..	..	..	1
East Stroudsburg	..	..	..	3	..	1	..	..	..	..	..
Etna	..	..	3	3	..	2	..	..	..	..	..
Farrell	..	..	..	..	1	1	..	..	..	..	..
Forest City	..	..	1	..	1	..	..	..	..	..	..
Franklin	1	..	2(1)	..	..	1	..	..	..	..	..
Girardville	..	..	3	3	..	1	..	..	..	..	..
Harrisburg	7	..	3	2	9	3	..	..	..	..	1
Honesdale	2	..	1	..	..	1	..	..	..	..	..
Jeannette	..	..	..	..	..	1	..	..	..	..	..
Jersey Shore	..	..	1	2	..	1	..	..	..	..	..
Johnstown	8	..	3	..	5	1	1	..	..	..	(i)
Lansdowne	..	1	2	..	1	1	..	..	..	..	..
Latrobe	..	..	..	5	1	1	..	..	..	..	..
Lewistown	2	..	..	..	..	..	..	..	..	..	..

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
PENNSYLVANIA (Continued):											
Mauch Chunk	3	1	2	..	..	2	..	..	..	..	1
McKeesport	1	1	4	..	..	1	1	..	..	..	..
Meadville	1	..	..	1	1	1	..	..	..	2	..
Mercer	..	..	1	1	..	..	..	..	..	..	..
Monessen	..	..	1	5	..	1	..	..	..	..	..
Mt. Carmel	2	..	..	4	2	..	1	..	..	..	..
Mount Pleasant	..	..	..	3	..	1	..	..	..	..	..
Manticoke	..	..	..	2	2	2	..	..	..	..	..
New Brighton	..	..	2	3	..	1	..	..	..	..	..
New Castle	1	..	..	..	7	2	1	..	..	1	1
Norristown	3	2	..	..	2	1	..	..	..	..	..
Oil City	1	..	3	(1)	..	1	..	..	..	..	..
Olyphant	..	..	2	2	..	..	..	..	..	..	..
Philadelphia	56	6	..	3	53	..	15	2	1	..	12
Phillipsburg	2	..	..	5	..	1	..	..	..	..	..
Pittsburg	45(6)	3(1)	3	30(4)	17(1)	12	9	1	..	..	10
Pottstown	2(1)	..	..	..	2	1	1	..	..	..	..
Pottsville	4	..	1(1)	1	1	1	1	..	..	..	..
Rankin	..	..	1	1	1	1	..	..	..	..	1
Reading	11	2	..	..	11	2	..	..	..	..	..
Ridgway	..	..	2	..	..	2	..	..	..	..	..
St. Clair	1	1	..	5	1	1	..	..	..	..	..
Scranton	7	1	6	1	8	1	..	..	..	..	..
Shamokin	1	..	1	..	3	..	1	..	..	..	1
Sharon	..	..	2	..	..	1	..	..	..	..	..
South Fork	..	..	1	..	1	1	..	..	..	..	..
Stroudsburg	1	2	..	2	1	..	..	..	..	..	1
Sunbury	2	..	5(3)	3	1	1	..	..	..	..	..
Susquehanna	..	1	1	2	..	..	..	..	..	..	..
Towanda	1	..	..	5	..	1	..	..	..	..	..
Warren	1	..	2	..	1	1	..	..	..	..	..
Washington	1	..	..	..	1	1	..	..	..	..	..
Watsonstown	1	..	..	2	..	1	..	..	..	..	..
Wilkes-Barre	6(1)	1	1	..	5	1	2	..	..	..	1
RHODE ISLAND:											
Pawtucket	(2)	..	..	..	5(1)	2(1)	1	..	..	..	(1)
Providence	17(3)	..	11(3)	..	11	6(1)	6(1)	1	..	..	4(1)
Westerly	2	..	2	4	1	1	..	..	1	..	..
SOUTH CAROLINA:											
Aiken	1	..	..	..	1	..	..	..	..	..	..
Beaufort	2	..	..	2	..	1	..	..	..	..	..
Charleston	11(4)	1	7	..	2	1	1	1	..	..	1
Chester	..	..	2	..	..	..	..	..	..	..	..
Darlington	1	1	2	2	1	1	..	..	..	..	..
Greenville	(1)	..	3(1)	(1)	..	1	..	..	..	..	..
Orangeburg	..	..	2b	..	..	1	..	..	..	..	..
Spartanburg	1	1	3	1	1	1	..	..	..	..	..
SOUTH DAKOTA:											
Aberdeen	1	..	(1)	..	1	..	..	..	..	..	..
Yankton	..	1	1	..	..	2	..	..	..	..	..
TENNESSEE:											
Bristol	..	1	2	..	..	..	..	..	..	..	2
Chattanooga	6	1	..	2	4	..	1	..	..	..	..
Cleveland	..	..	..	1	1	..	..	..	..	..	..
Columbia	..	..	..	1	1	..	..	..	..	..	..
Covington	..	..	1	1	..	..	..	..	..	..	..
Fayetteville	..	..	1	..	..	..	..	..	..	..	..
Gallatin	..	1	1	1	..	..	..	1	..	..	..
Nashville	9(2)	1(1)	3	3(2)	6	1	2	..	..	..	3
Tullahoma	..	..	2	3	..	1	..	..	..	..	..
Union City	..	..	1	1	..	..	..	..	..	..	..
TEXAS:											
Austin	..	..	7	..	..	1	..	..	..	..	1
Bonham	..	..	1	1	..	1	..	..	..	..	..
Comanche	..	1	..	..	1	..	..	..	..	..	..
Dallas	8	2	4	5	4	4	1	..	..	..	..
El Paso	3	..	..	..	5	1	1	..	..	..	..
Gainesville	..	1	2	..	1	1	..	1	..	..	..
Galveston	4	1	5	..	5	2	1	..	..	..	..
Georgetown	..	1	1	2	..	1	..	1	..	..	..
Gonzales	..	1	1	..	..	1	..	..	..	..	..
Honey Grove	1	..	..	1	1	1	..	..	..	..	2
Houston	10	1	7	1	2	2	2	1	..	..	1
Lufkin	..	1	2	..	..	1	..	..	..	..	..
McKinney	1	..	..	..	..	..	..	..	..	..	..
Quanah	..	..	2	..	(1)	1	..	..	..	..	1
Longview	1	2	2	..	..	1	..	..	..	..	..
San Marcos	..	..	2	..	..	1	..	..	..	..	1
Sherman	1	1	3	1	..	1	..	..	..	..	..
Smithville	..	..	..	..	..	1	..	..	..	..	..
Terrell	..	..	1	..	..	1	..	..	..	..	..
Tyler	..	1	1	..	1	1	..	..	..	..	..
Victoria	..	..	..	1	..	1c	..	..	..	..	1
Waxahachie	1	..	1	2	1	1	..	..	..	..	..
Yoakum	1	1	1	..	..	..	..	..	..	..	..
UTAH:											
Logan	..	2	2	1	2	..	..	..	..	..	1
Ogden	1	1	3	1	1	1	1	..	..	..	1
Park City	..	2	6	14	..	1	..	..	..	..	..
Salt Lake City	3(1)	..	4(1)	1	..	3(1)	1	..	..	..	..
VERMONT:											
Bellows Falls	1	..	..	..	1	1(1)	..	..	..	..	..
Bennington	1	..	1	..	..	1	..	..	..	..	1
St. Albans	..	..	2	..	..	1	..	..	..	..	..
St. Johnsbury	..	..	5	..	..	1	..	..	..	..	..
Montpelier	..	..	2	..	..	1	..	..	..	..	..
VIRGINIA:											
Alexandria	3	..	2	2	..	1	..	..	..	..	1
Buena Vista	..	..	1	..	..	1	..	..	..	..	..
Charlottesville	1	..	2	1	..	1	..	..	..	..	..
Clifton Forge	..	..	1	3	..	1	..	..	..	..	..
Covington	..	1	..	..	1	1	..	..	..	..	..
Farmville	1	1	1	..	1	1	..	..	..	..	..
Fredericksburg	..	..	..	2	..	1	..	..	..	..	..

For foot notes, see page 481.

TABLE NO. 1.—HORSE-DRAWN APPARATUS (Continued)

Name of City.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water tower.	Fire boats.	Squad wagons.	Chief's buggies.
Harrisonburg	1	..	2	..	1	1	1	..	..	..	1
Newport News	3	..	3	..	3	1	1	1	..	..	1
Petersburg	3	..	..	..	5	1	..	..	..	..	..
Portsmouth	3	..	..	..	13	4(1)	3	3	..	..	3(1)
Richmond	13(1)	..	..	..	3(1)	..	1	..	..	..	1
Roanoke	3	..	1b	..	..	..	..	..	..	..	..
Salem .....	..	..	1	..	(1)	..	..	..	..	..	..
Staunton	1	..	1	..	1	1	..	..	..	..	..
Suffolk	2	1	1	1	..	..	..	..	..	..	..
Wytheville .....	..	..	..	..	..	1	..	..	..	..	..
WASHINGTON:											
Bellingham .....	..	..	..	..	2	..	..	..	..	..	..
Everett	1	..	3	..	..	1a	..	..	..	..	1
Hoquiam	1	..	..	..	3	1	..	..	..	..	..
North Yakima	(1)	..	..	..	..	..	..	..	..	..	..
Olympia .....	..	..	1	..	..	..	..	..	..	..	..
Port Townsend	1	..	1	4	..	1	..	..	..	..	..
Snohomish	1	..	1	..	..	..	..	..	..	..	..
Tacoma	10	2	9	..	(1)	..	1	..	..	..	(2)
Vancouver	2	1	3	2	2	..	..	..	..	..	..
Walla Walla	(2)	1	1	..	1	1	..	..	..	..	1
WEST VIRGINIA:											
Charleston	3	2	4	..	1	1	1	1	..	..	1
Keyser .....	..	..	..	3	..	1	..	..	..	..	..
Martinsburg .....	..	..	1	4	1	1	..	..	..	..	..
Morgantown .....	..	..	1	..	1	1	..	..	..	..	..
Wheeling	4	1	..	..	7	1	1	..	..	..	1
WISCONSIN:											
Algoma .....	..	..	..	..	..	1	..	..	..	..	..
Ashland .....	..	1	3	2	1	1	..	..	..	..	1
Beaver Dam .....	..	..	2	..	..	1	..	..	..	..	..
Burlington	2	..	1	2	..	1	..	..	..	..	..
Chippewa Falls .....	..	1	2	..	2	1	..	..	..	..	..
Columbus	1	..	..	..	..	1	..	..	..	..	..
De Pere	1	..	2	..	..	1	..	..	..	..	..
Eau Claire	1	..	3	1	..	1	..	..	..	..	1
Fond du Lac	1	..	1	1	1	1	..	..	..	..	1
Kenosha .....	..	..	1	..	3	1	..	..	..	..	1
Manitowoc	2	1	3	..	..	1	..	..	..	..	1
Milwaukee	26(3)	6(2)	20(3)	..	11	9(2)	5	1	4	..	(7)
Menominee .....	..	..	1	2	2	1	..	..	..	..	..
Merrill .....	..	..	2	..	..	1	..	..	..	..	..
Oconomowoc	1	..	..	..	1	1	..	..	..	..	1
Racine	2	..	..	2	3	2	..	..	..	..	..
Rhineland .....	..	..	1(2)	..	1	1	..	..	..	..	..
Stevens Point	1	..	2	..	..	1	..	..	..	..	..
Stoughton .....	..	..	1	..	..	..	..	..	..	..	1
Superior	3	..	2	..	4	1	..	..	..	..	..
Tomah .....	..	2	2	..	1	2	..	..	..	..	..
Two Rivers	1	1	1(1)	..	..	1	..	..	..	..	..
Waupun .....	..	1	1	1	..	1	..	..	..	..	..
Wausau	2	..	1b	..	3b	1	..	..	..	..	1

a.—And chemical. b.—With ladder. c.—And hose combination. d.—Private. e.—Volunteer. f.—3-inch high pressure and 4-way turret nozzle. Note.—Figures in parenthesis indicate apparatus in reserve.

NOTES TO TABLE No. 1.

A number of the cities have other pieces of horse-drawn apparatus of kinds not specified in table No. 1. The most common of these is perhaps supply wagons. These are reported by Selma, Ala.; Berkeley, Cal.; Meriden, Conn.; Washington, D. C. (3); Atlanta, Ga.; Springfield, Ill.; Ft. Wayne, Ind.; New Albany, Ind.; Brockton, Mass. (6); Laurence, Mass. (9); Salem, Mass.; Waltham, Mass.; Adrian, Mich.; Ann Arbor, Mich.; Escanaba, Mich.; Port Huron, Mich.; Marshall, Minn.; Bayonne, N. J.; Jersey City, N. J.; Newark, N. J. (2); Ithaca, N. Y.; Rochester, N. Y. (2); Columbus, O. (6); Oklahoma City, Okla.; Astoria, Ore.; Altoona, Pa.; Pittsburgh, Pa., and Houston, Tex. (2).

It is possible that the same vehicle is used by some cities as both supply, exercise and repair wagon. However, we will in each case use the designation given in the report rendered to us. Exercise wagons are reported from Rockford, Ill.; Medford, Mass. (5, also used as fuel wagons); Newburyport (carries hose, nozzles, axes, etc.); Westfield, Mass. (2); Newark, N. J. (26); Alexandria, Va. (3); Wheeling, W. Va. (4); Milwaukee, Wis. (20).

Fuel wagons are reported from Stamford, Conn. (2); Washington, D. C. (5); Atlanta, Ga.; Rockford, Ill.; Cambridge, Mass. (7); Lowell, Mass. (6); Medford,

Mass. (5); Newton, Mass. (6); Minneapolis, Minn. (5); Omaha, Neb.; Pittsburgh, Pa. (8); Milwaukee, Wis. (6); Superior, Wis. (with turret nozzle).

Repair wagons are reported from Savannah, Ga. (3); Lexington, Ky.; New Orleans, La.; New Rochelle, N. Y., and Milwaukee, Wis.

Other apparatus and appliances reported are as follows: San Francisco, three monitor batteries; Norwich, Conn., ladder pipe; Washington, D. C., one wrecking wagon; Topeka, Kan., fire alarm repair wagon and deluge sets carried on ladder trucks; Brockton, Mass., portable water tower on aerial ladder; Hingham, Mass., forest fire wagon; Laurence, Mass., six hose pungs; Marlboro, Mass., brush fire wagon; North Attleboro, Mass., two brush fire wagons; Pittsfield, Mass., 3 wagon pipes for large streams and a deluge set; Lansing, Mich., wagon for superintendent of fire alarm telegraph; Minneapolis, 2 horse shoer's wagons; Kansas City, Mo., high-pressure wagon; Morristown, N. J., patrol wagon; Newark, N. J., 2 telegraph wagons, 1 buggy for superintendent of fire alarm telegraph and 2 sleighs; Ogdensburg, N. Y., fire alarm wagon; Rochester, N. Y., salvage corp wagon; Oklahoma City, Okla., electricians' wagon; Philadelphia, two pipe line wagons for high-pressure service and two mounted nozzle wagons; Pottsville, Pa., ladder pipe used on aerial ladder; Scranton, Pa., the same; Providence, R. I., salvage wagon; Portsmouth, Va., ladder pipe used on aerial ladder; Superior, Wis., 3 deluge sets.

(Continued on page 487)

FIRE APPARATUS IN AMERICAN CITIES
TABLE NO. 2.—MOTOR-PROPELLED APPARATUS

Name of City.	Chief's car without Chemical tanks	Squad wagons without Chemical tanks	Hose wagons	Chemical engines	Chemical and hose carrying ladders	Hook and ladder trucks. Gasoline line	Electric Gasoline tower	Gasoline pumping engines With- out—Hose—	And Chemical hose engines	Gasoline propelled steam and pumping service wagons	Repair and service wagons	Apparatus named on which tractors are used	Number of wheels on tractors
ALABAMA:													
Birmingham	2	..	..	..	18	..	..	..	..	2	1	..	..
Gadsden	..	..	..	..	1	..	..	..	..	..	..	..	..
Mobile	..	..	..	..	2	..	..	..	..	..	..	..	..
Montgomery	1	..	..	..	..	..	..	..	..	..	..	..	..
Selma	1	..	..	..	..	..	..	..	..	..	..	..	..
ARKANSAS:													
Batesville	..	..	..	..	..	..	..	..	..	..	..	..	..
Fort Smith	1	..	..	..	..	..	1	..	..	..	..	..	..
Hot Springs	..	..	..	..	..	..	..	..	..	1	..	..	..
Little Rock	1	..	..	..	1	..	..	..	..	..	..	..	..
Texarkana	..	..	..	..	2	..	..	..	..	1	..	..	..
CALIFORNIA:													
Alameda	..	..	..	..	..	..	..	1	..	..	..	..	..
Bakersfield	1	..	..	..	..	..	..	..	..	..	..	..	..
Berkeley	1	..	..	..	4	..	..	..	..	..	..	..	..
Eureka	..	..	..	..	1	..	..	..	..	..	..	..	..
Hanford	..	..	..	..	1	..	..	..	..	..	..	..	..
Long Beach	..	..	..	..	2	..	..	..	..	..	..	..	..
Los Angeles	2	..	..	..	1	..	..	..	..	..	..	..	..
Oakland	2	..	..	..	7	..	..	4	..	..	..	..	..
Pasadena	..	..	..	..	5	..	..	1	..	..	..	..	..
Petaluma	..	..	..	..	1	..	..	..	..	..	..	..	..
Redlands	..	..	..	..	1	..	..	..	..	1	..	..	..
San Bernardino	1	..	..	..	..	..	..	..	..	..	..	..	..
San Francisco	3	..	..	..	1	..	..	..	..	..	..	..	..
Santa Cruz	..	..	..	..	1	..	..	..	..	..	..	..	..
Santa Monica	1	..	..	..	1	..	..	..	..	..	..	..	..
Santa Rosa	..	..	..	..	1	..	..	..	..	..	..	..	..
Stockton	1	..	..	..	1	..	..	..	..	..	..	..	..
COLORADO:													
Colorado Springs	1	..	..	..	2	..	..	..	..	..	..	..	..
Grand Junction	1	..	..	..	2	..	..	..	..	..	..	..	..
Pueblo	1	..	..	..	1	..	..	1	..	..	..	..	..
CONNECTICUT:													
Greenwich	..	..	..	1	1	..	..	..	..	..	..	..	..
Hartford	3	..	1	..	5	..	..	..	..	..	..	..	..
Meriden	..	..	..	..	1	..	..	1	..	..	..	..	..
Middletown	..	..	..	..	1	..	..	..	..	..	..	..	..
Norwalk	..	..	..	..	1	..	..	..	..	..	..	..	..
Norwich	..	..	..	..	1	..	..	..	..	..	..	..	..
Orange	..	..	..	..	2	..	..	..	..	1	..	..	3
So. Manchester	1	..	..	..	1	..	..	..	..	..	..	..	..
Stamford	2	..	..	..	1	..	..	1	..	..	..	..	..
Wallingford	..	..	..	..	1	..	..	..	..	..	..	..	..
Waterbury	2	..	..	1	1	..	..	1	..	..	..	..	..
DELAWARE:													
Wilmington	..	1	..	..	2	..	..	3	3	3	..	..	..
DISTRICT OF COLUMBIA:													
Washington	3	..	..	..	1	..	..	2	1	..	..	..	..
FLORIDA:													
Gainesville	2	..	..	..	1	..	..	..	..	..	..	..	4
Jacksonville	1	..	..	..	1	..	..	..	..	..	..	..	..
St. Petersburg	1	..	..	..	3	..	..	..	..	..	..	..	..
Tampa	1	..	..	..	..	..	..	..	..	..	..	..	..
GEORGIA:													
Americus	..	..	..	..	1	..	..	..	..	..	2	..	..
Athens	1	..	..	..	1	..	..	..	..	..	..	..	..
Atlanta	1	..	..	..	2	..	..	..	..	..	..	..	..
Augusta	1	..	..	..	..	..	..	1	..	..	..	..	..
Columbus	..	..	..	..	..	..	..	..	..	1	..	..	..

For foot notes, see page 487.

TABLE NO. 2.—MOTOR-PROPELLED APPARATUS (Continued)

Name of City.	Chiefs car without chemical tanks	Squad wagons without chemical tanks	Hose wagons	Chem- ical engines	Chem- ical and hose ladders	Hook and ladder trucks. Gasoline-Elec- tric	Wa- ter- towers	Gasoline pumping engines			Repair and service wagons	Apparatus named on which tractors are used	Numbers of wheels on tractors
								With- out	With Hose	And Chemical and hose engines			
GEORGIA (Continued):													
Macon	1	..	..	..	2	2	..	..	5	..	..	..	..
Rome	1	..	..	1	4	..	..	..	7	..	..	..	..
Savannah	2	..	..	..	..	..	..	..	..	..	..	..	..
Valdosta .....	..	..	..	..	..	..	..	..	..	..	..	..	..
IDAHO:													
Lewiston .....	..	..	..	..	1	..	..	..	..	..	..	..	..
ILLINOIS:													
Aurora .....	..	..	..	..	1	..	..	..	..	..	..	..	..
Bloomington	8	..	..	23	1	..	..	1	1	..	..	..	..
Chicago .....	..	..	..	1	..	..	..	..	..	1	..	..	..
Danville .....	..	..	..	..	1	..	..	..	..	..	..	..	..
De Kalb .....	..	..	..	..	..	..	..	..	..	..	..	..	..
Evansston .....	..	..	..	..	..	..	..	..	..	1	..	..	..
Moline .....	..	..	..	..	..	..	..	..	..	..	..	..	..
Peoria	1	..	..	2	2	1	..	..	1	..	..	..	..
Rockford	1	..	..	1	..	1	..	..	2	..	..	..	..
Waukegan .....	..	..	..	..	..	..	..	..	..	..	..	..	..
INDIANA:													
Attica .....	..	..	8	..	1	..	..	..	..	..	..	..	..
Evansville .....	..	..	..	..	1	..	..	..	..	..	..	..	..
Lafayette	1	..	..	1	1	..	..	..	..	..	..	..	..
La Porte .....	..	..	..	..	1	..	..	..	..	..	..	..	..
Mishawaka .....	..	..	..	..	..	..	..	..	..	..	..	..	..
Muncie	1	..	..	3	..	..	..	2	2	..	..	..	..
Peru	1	1	1	1	1	..	..	..	..	..	..	..	..
Plymouth	1	..	..	1	1	1	..	..	..	..	..	..	..
Rockville	1	..	..	1	1	..	..	..	..	..	..	..	..
Vincennes .....	..	..	..	..	1	..	..	..	..	..	..	..	..
IOWA:													
Davenport	1	..	..	..	..	..	..	..	..	..	..	..	..
Dubuque	1	..	..	..	1	..	1	..	..	1	..	..	..
Indianola .....	..	..	..	1	..	..	..	..	..	..	..	..	..
Des Moines	1	..	..	1	..	..	..	..	..	..	..	..	..
Iowa City .....	..	..	..	..	1	..	..	..	..	..	..	..	..
Marshalltown .....	..	..	..	..	1	..	..	..	..	1	..	..	..
Sioux City	1	..	..	..	1	..	..	..	..	..	..	..	..
Waterloo .....	..	..	..	..	1	..	..	..	..	..	..	..	..
KANSAS:													
Atchison .....	..	..	..	2	1	..	..	..	1	..	..	..	..
Hutchinson .....	..	..	..	..	..	..	..	..	1	..	..	..	..
Leavenworth	1	..	..	..	..	..	..	..	..	..	..	..	..
Ottawa	1a	..	1	..	1	..	..	..	..	..	..	..	..
Salina .....	..	..	..	..	..	..	..	..	..	..	..	..	..
Topeka	1	..	..	..	1	..	..	..	..	..	..	..	..
KENTUCKY:													
Covington .....	..	..	..	1	1	..	..	..	..	1	..	..	..
Lexington .....	..	..	..	..	..	..	..	..	..	..	..	..	..
Louisville	2	..	..	..	..	..	..	..	..	1	..	..	..
Richmond	1	..	..	..	1	..	..	..	..	..	..	..	..
Shelbyville .....	..	..	..	..	..	..	..	..	..	..	..	..	..
LOUISIANA:													
New Orleans	1	..	4	1	1	..	..	..	..	..	..	aerial truck	..
MAINE:													
Lewiston .....	..	..	..	..	1	..	..	..	..	..	..	..	..
MARYLAND:													
Annapolis	4	..	..	..	4	..	..	..	1	..	2	..	..
Baltimore .....	..	..	..	..	..	..	..	..	..	..	..	..	..
MASSACHUSETTS:													
Attleboro	3	..	..	..	3	..	..	..	..	..	..	..	..
Boston .....	..	1	..	..	1	..	..	..	..	..	1	..	..
Brocton	1	..	..	..	1	..	..	..	..	..	..	..	..
Brookline	1	..	..	..	1	..	..	..	..	..	..	..	..
Chicopee	1	..	..	..	1	..	..	..	1	..	..	..	..
Danvers .....	..	..	..	..	1	..	..	..	..	..	..	..	..

For foot notes, see page 487.

TABLE NO. 2.—FIRE APPARATUS IN AMERICAN CITIES—MOTOR-PROPELLED APPARATUS (Continued)

Name of City.	Chief's car without chemical tanks	Squad wagons without chemical tanks	Hose wagons	Chemical hose engines	Chemical hose carrying ladders	Hook and ladder trucks.	Gasoline pumping engines	Gasoline propelled steam and pumping engines	Repair and service wagons	Apparatus named on which tractors are used	Number of wheels on tractors
MASSACHUSETTS (Continued.)											
Fitchburg	1	..	..	..	1	..	..	..	..	..	..
Gloucester	..	..	..	..	1	..	..	..	..	..	..
Greenfield	..	..	..	..	1	..	..	..	..	..	..
Haverhill	1	..	1	..	1	..	..	..	..	..	..
Holyoke	3	..	..	..	1	..	..	..	..	..	..
Lowell	1	..	..	..	..	..	..	..	..	..	..
Lynn	1	..	..	..	..	..	..	..	..	..	..
Marblehead	1	..	..	..	3	..	..	1	1	..	..
New Bedford	2	..	..	..	2	..	..	..	..	..	..
Newton	1	..	..	..	2	..	..	..	..	..	..
Quincy	1	..	..	1	1	..	..	..	..	..	..
Somerville	1	..	..	..	1	..	..	..	..	..	..
Springfield	4	2b	..	..	9	3	..	..	1	ladder truck	4
Swampscott	..	..	..	..	1	1	..	..	2	water tower	3
Taunton	..	..	..	..	1	..	..	1	1	..	..
Wakefield	..	..	1	..	..	..	..	1	1	..	..
Waltham	1	..	..	..	1	..	..	..	..	..	..
Ware	..	..	..	..	..	..	..	1	..	..	..
Westfield	..	1	..	..	1	..	..	..	..	..	..
Worcester	1	1	..	..	..	..	..	..	..	..	..
MICHIGAN:											
Alma	..	..	1	..	..	..	..	..	..	..	..
Battle Creek	13	2	1	..	1	..	..	1	..	ladder truck	5
Detroit	1	..	..	..	1	..	..	..	..	..	..
Flint	..	..	8	..	..	..	..	2	..	..	..
Grand Rapids	1	..	..	2	..	..	..	..	..	..	..
Jackson	1	..	..	..	..	..	..	..	..	..	..
Kalamazoo	1	..	..	1b	..	..	..	2	..	..	..
Lansing	1	..	..	..	..	..	..	..	..	..	..
Manistique	1	..	1	..	..	1	..	..	..	..	..
Pontiac	..	..	..	..	1	..	..	..	..	..	..
Port Huron	..	..	..	..	1	..	..	..	..	..	..
MINNESOTA:											
Little Falls	3	..	..	..	..	..	..	..	..	..	..
Minneapolis	6	1	..	..	3	..	..	1	1	..	..
Rochester	..	1	..	..	..	..	..	1	..	..	..
St. Paul	4	..	..	..	..	..	..	..	..	..	..
MISSISSIPPI:											
Jackson	..	..	..	..	1	..	..	..	..	..	..
MISSOURI:											
Clinton	..	..	1	..	1	..	..	..	..	..	..
Jefferson	..	..	..	..	1	..	..	..	..	..	..
Kansas City	2	..	1	..	1	..	..	1	..	..	..
Kirksville	..	..	..	..	3	..	..	..	..	..	..
Lamar	..	..	..	..	..	1	..	1	..	..	..
Monroe City	..	..	..	..	..	..	..	..	..	..	..
Monroe City	2	..	..	..	..	..	..	..	..	..	..
St. Joseph	2	..	..	..	..	..	..	..	..	..	..
St. Louis	3	..	1	..	..	..	..	2	..	..	..
Webb City	..	..	..	..	1	..	..	..	..	..	..
MONTANA:											
Bozeman	1	..	1	1	1	1	..	..	..	..	..
Missoula	..	..	..	..	..	..	..	..	..	..	..
NEBRASKA:											
Columbus	1	..	..	..	1	..	..	..	..	..	..
Lincoln	1	..	..	..	2	..	..	1	..	..	..
Omaha	1	..	..	..	..	..	..	..	..	..	..
South Omaha	1	..	..	..	..	..	..	..	..	..	..
NEW HAMPSHIRE:											
Franklin	..	1	1	..	1	..	..	..	..	..	..
Manchester	..	1	..	..	..	..	..	..	..	..	..
NEW JERSEY:											
Atlantic City	3	..	..	..	..	..	..	..	..	..	..
Bayonne	..	..	..	..	5	..	..	..	1	..	..
East Orange	..	..	..	..	..	..	..	..	..	..	..
Elizabeth	1	..	(2)	..	..	1	..	..	..	..	..

For foot notes, see page 487.

TABLE NO. 2.—FIRE APPARATUS IN AMERICAN CITIES—MOTOR-PROPELLED APPARATUS (Continued)

Name of City.	Chief's car without chemical tanks (Continued):	Squad wagons without chemical tanks	Chem- ical eng- ines	Chem- ical and hose ladders	Hook and ladder trucks. Gasoline line	Elec- tric	Gasoline trucks. Gasoline line	Gasoline pumping engines		Repair and service wagons	Apparatus named on which tractors are used	Number of wheels on tractors
								With- out Hose	And Chem- ical hose engines			
NEW JERSEY (Continued):												
Englewood	1	1	1	1	1	1	1	1b	1	1	hook and ladder	5
Glen Ridge	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Hackensack	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Hoboken	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Irvington	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Jersey City	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Kearny	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Lambertville	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Madison	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Morristown	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Newark	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Passaic	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Paterson	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Ridgewood	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Summit	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Westfield	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
West Orange	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
NEW MEXICO:												
Albuquerque	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
NEW YORK:												
Albany	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Athens	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Auburn	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Binghamton	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Dunkirk	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Gloversville	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Goshen	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Herkimer	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Ithaca	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Jamestown	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Malone	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Middletown	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Newburgh	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
New Rochelle	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
New York	20	1	1	1	1	1	1	1	1	1	hook and ladder	5
Niagara Falls	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Peekskill	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Penn Yan	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Poughkeepsie	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Rochester	4	1	1	1	1	1	1	1	1	1	hook and ladder	5
Saratoga Springs	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Schenectady	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Syracuse	3	1	1	1	1	1	1	1	1	1	hook and ladder	5
Yonkers	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
NORTH CAROLINA:												
Charlotte	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Greensboro	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Greenville	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
OHIO:												
Akron	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Alliance	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Ashtabula	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Bucyrus	4	1	1	1	1	1	1	1	1	1	hook and ladder	5
Cleveland	6	1	1	1	1	1	1	1	1	1	hook and ladder	5
Columbus	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
East Cleveland	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Elyria	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Lancaster	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Lima	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Lorain	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Mansfield	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Marion	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Marion	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Norwalk	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Norwood	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Ottawa	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Portsmouth	2	1	1	1	1	1	1	1	1	1	hook and ladder	5
Toledo	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Warren	1	1	1	1	1	1	1	1	1	1	hook and ladder	5
Youngstown	1	1	1	1	1	1	1	1	1	1	hook and ladder	5

For foot notes, see page 487.

TABLE NO. 2.—MOTOR-PROPELLED APPARATUS (Continued)

Name of City.	Chief's car without | with Chemical tanks	Squad wagons without | with Chemical tanks	Hose wagons	Chem- ical engines	Chem- ical hose ladders	Hook and ladder trucks. Gasoline Electric	Wa- ter- tow- ers	Gasoline pumping engines		Repair and service wagons	Apparatus named on which tractors are used	Number of wheels on tractors
								With- out Hose	And Chemical and hose engines			
OKLAHOMA:												
Enid	1	1	1	1	1	1	1	1	1	1	1	1
Muskogee	1	1	1	1	1	1	1	1	1	1	1	1
Oklahoma City	1	1	1	1	1	1	1	2	1	2	aerial truck	2
Tulsa	1	1	1	1	1	1	1	1	1	1	1	1
OREGON:												
Astoria	1	1	1	1	1	1	1	1	1	1	1	1
Baker	1	1	1	1	1	1	1	1	1	1	1	1
Grants Pass	5	1	1	1	1	1	1	1	1	1	1	1
Portland	1	1	1	1	1	1	1	1	1	1	1	1
PENNSYLVANIA:												
Allentown	1	1	1	1	1	1	1	1	1	1	1	1
Altoona	1	1	1	1	1	1	1	1	1	1	1	1
Bristol	1	1	1	1	1	1	1	1	1	1	1	1
Butler	1	1	1	1	1	1	1	1	1	1	1	1
Connellsville	1	1	1	1	1	1	1	1	1	1	1	1
Dunmore	1	1	1	1	1	1	1	1	1	1	1	1
Johnstown	1	1	1	1	1	1	1	1	1	1	1	1
Lewistown	1	1	1	1	1	1	1	1	1	1	1	1
Meadville	1	1	1	1	1	1	1	1	1	1	1	1
Mr. Carmel	1	1	1	1	1	1	1	1	1	1	1	1
Nanticoke	1	1	1	1	1	1	1	1	1	1	1	1
New Brighton	1	1	1	1	1	1	1	1	1	1	1	1
New Castle	1	1	1	1	1	1	1	1	1	1	1	1
Norristown	1	1	1	1	1	1	1	1	1	1	1	1
Oil City	1	1	1	1	1	1	1	1	1	1	1	1
Philadelphia	1	1	1	1	1	1	1	1	1	1	1	1
Pittsburgh	1	1	1	1	1	1	1	1	1	1	1	1
Pottsville	1	1	1	1	1	1	1	1	1	1	1	1
Ranking	1	1	1	1	1	1	1	1	1	1	1	1
Reading	1	1	1	1	1	1	1	1	1	1	1	1
St. Clair	1	1	1	1	1	1	1	1	1	1	1	1
Scranton	1	1	1	1	1	1	1	1	1	1	1	1
Stroudsburg	1	1	1	1	1	1	1	1	1	1	1	1
Sunbury	1	1	1	1	1	1	1	1	1	1	1	1
Washington	1	1	1	1	1	1	1	1	1	1	1	1
Wilkes-Barre	1	1	1	1	1	1	1	1	1	1	1	1
RHODE ISLAND:												
East Providence	1	1	1	1	1	1	1	1	1	1	1	1
Pawtucket	1	1	1	1	1	1	1	1	1	1	1	1
Providence	1	1	1	1	1	1	1	1	1	1	1	1
SOUTH CAROLINA:												
Charleston	1	1	1	1	1	1	1	1	1	1	1	1
Greenville	1	1	1	1	1	1	1	1	1	1	1	1
Orangeburg	1	1	1	1	1	1	1	1	1	1	1	1
TENNESSEE:												
Chattanooga	1	1	1	1	1	1	1	1	1	1	1	1
Nashville	2	1	1	1	1	1	1	1	1	1	1	1
TEXAS:												
Austin	1	1	1	1	1	1	1	1	1	1	1	1
Dallas	1	1	1	1	1	1	1	1	1	1	1	1
El Paso	1	1	1	1	1	1	1	1	1	1	1	1
Galveston	1	1	1	1	1	1	1	1	1	1	1	1
Georgetown	1	1	1	1	1	1	1	1	1	1	1	1
Houston	1	1	1	1	1	1	1	1	1	1	1	1
Quanah	1	1	1	1	1	1	1	1	1	1	1	1
Longview	1	1	1	1	1	1	1	1	1	1	1	1
Sherman	1	1	1	1	1	1	1	1	1	1	1	1
Terrell	1	1	1	1	1	1	1	1	1	1	1	1
Yoakum	1	1	1	1	1	1	1	1	1	1	1	1
UTAH:												
Ogden	1	1	1	1	1	1	1	1	1	1	1	1
Salt Lake	1	1	1	1	1	1	1	1	1	1	1	1
VERMONT:												
St. Johnsbury	1	1	1	1	1	1	1	1	1	1	1	1

For foot notes, see page 487.

For foot notes, see page 487.

TABLE NO. 2.—MOTOR-PROPELLED APPARATUS (Continued)

Name of City.	Chief's car without Chemical tanks	Squad wagons without Chemical tanks	Hose wagons	Chem- ical eng- ines	Chem- ical hose and carrying ladders	Hook and ladder trucks.		Wa- ter- tow- ers	Gasoline pumping engines			Repair and service wagons	Apparatus named on which tractors are used	Number of wheels on tractors	
						Gas- line	Elec- tric		With- out Hose	And chem- ical	Chem- ical and pump- ing hose engines				
VIRGINIA:															
Petersburg	1c	..	..	..	5	..	..	..	1	..	..	..	..	..	..
Portsmouth	..	..	..	..	2	..	..	..	2	2	2	4	..	..	..
Richmond	3	..	..	..	3	..	..	..	..	..	1	..	..	..	..
Roanoke	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Staunton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WASHINGTON:															
Bellingham	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Everett	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..
North Yakima	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Olympia	..	..	..	..	1	..	1	..	..	..	..	1	H. & L.	4	..
Shohomish	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..
Tacoma	2	..	1	..	3	..	1	..	..	..	..	..	..	..	..
Vancouver	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Walla Walla	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
WEST VIRGINIA:															
Charleston	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Wheeling	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WISCONSIN:															
De Pere	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Eau Claire	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Kenosha	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..
Milwaukee	7 (1)	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oconomowoc	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Racine	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Superior	1	..	1	..	..	..	1	..	..	..	..	..	H. & L.	4	..
A. Carries 500 ft. of hose, smoke helmet, 9 salvage covers and 2 nozzles.															
B. With ladders.															
C. Private.															

NOTES TO TABLE No. 2.

A number of cities have either ordered or are expecting to purchase motor apparatus which had not been received at the time of making the report. These were as follows: Dothan, Ala., will be in the market for motor apparatus in the near future; Selma, Ala., is considering the purchase of such apparatus; Bakersfield, Cal., is to buy three combination chemical and hose and two chemicals in a few weeks; San Bernardino is to obtain a tractor for hook and ladder and a combination chemical and hose in a few weeks. Longmont, Colo., expects to purchase auto apparatus; S. Manchester, Conn., has ordered combination chemical and hose and a ladder truck; St. Petersburg, Fla., expects to obtain a chemical and hose; Newnan, Ga., is figuring on a pumping engine, chemical and hose, and a ladder wagon; Rome, Ga., has ordered a gasoline pumping engine; Joliet, Ill., expects to purchase motor apparatus in the spring; Peru, Ind., has ordered two pumping engines with hose; Davenport, Ia., has ordered a tractor, a hose truck and a combination hook and ladder and hose, and expects to obtain more hose trucks next year. Coffeyville, Kan., expects to buy motor apparatus next year; New Orleans, La., has contracted for two runabouts and a tractor for an aerial truck; Lynn, Mass., has ordered two hose and chemicals, a pumping engine with hose and a chemical engine; Medford, Mass., has ordered a hook and ladder truck and will rebuild a combination chemical and hose for motor service; Pittsfield, Mass., has ordered a gas electric aerial truck; Lansing, Mich., has ordered a motor-pumping engine; Winona, Minn., has ordered a hose and chemical; Morristown, N. J., hopes to obtain a gasoline pumping engine; Greensboro, N. C., will buy motor apparatus soon; Raleigh, N. C., has ordered two chemicals and hose; Circleville, O., is to buy pumping engine with hose; Columbus, O., has contracted for four chemical and hose and six 4-wheel tractors; Lima, O., hopes to obtain a chief's car; Youngstown, O., "will motorize the entire department"; Portland, Ore., will install ten pieces of motor apparatus the first of next year; Beaver, Pa., desires combination chemical and hose; Philadelphia has ordered a motor truck, a high-pressure wagon, two combination wagons and 12 chief's cars; Columbia, Tenn., will buy motor apparatus next year; Galveston, Tex., is contemplating tractors; Sherman, Tex., has ordered pumping engine; Logan, Utah, expects to purchase hook and ladder and combined pumping engine and chemical in the near future, and Wheeling, W. Va., expects to buy chemical and hose.

A few cities have motor apparatus which is not given by the table. These include a motorcycle for the chief of Boulder, Colo.; two pumping engines, self-propelled by steam, at Hartford, Conn.; a protective wagon with chemical tank at Lowell, Mass.; a runabout for the superintendent of fire alarms at Springfield, Mass.; an auto truck for the telegraph department at Detroit, Mich.; a combination police and hose wagon with chemical at Webb City, Mo.; a motor-driven searchlight car, a telegraph car and a repair car at Newark, N. J.; two first-size Metropolitan engines, steam pumping, with 110 h. p. motor attachment, at Paterson, N. J.; a protective wagon owned by the protective department at Providence, R. I., and a motor supply wagon at Superior, Wis.

FIRE APPARATUS IN AMERICAN CITIES

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
ALABAMA:								
Birmingham	2		50,000	No	Yes	Yes	No	132,000
Dothan	2		2,000	Yes	No	Yes	No	10,000
Gadsden	2		4,200	No	No	No	No	10,557
Jasper	2		2,000	No	..	..	..	3,000
Montgomery	..		..	No	Yes	Yes	No	40,000
Selma	..		5,000	No	No	Yes	No	18,000
Talladega	..		3,500	No	No	No	No	6,000
ARIZONA:								
Bisbee	3	Chemical	10,000	No	No	No	Yes	10,000
Douglas	(2)		2,800	No	No	..	..	8,000
Nogales	2	2 H. & L.	1,500	No	No	No	No	6,514
Phoenix	(2)	Chemical	4,000	No	No	No	No	15,000
Prescott	3	H. & L.	4,000	No	No	Yes	No	7,000
ARKANSAS:								
Batesville	..		2,000	No	..	..	..	4,500
Brinkley	3	H. & L.	1,100	No	..	..	..	2,000
Eureka Springs	2		1,500	No	No	..	..	5,000
Fordyce	(4)		1,000	No	No	No	No	3,000
Fort Smith	..		10,000	Yes	No	Yes	No	27,500
Helena	1		2,000	No	No	No	No	16,486
Hot Springs	..		6,000	No	No	No	No	16,000
Jonesboro	..		2,200	No	No	No	No	10,000
Little Rock	..		7,500	No	Yes	No	No	50,000
Paragould	..		..	..	..	..	..	6,500
Pine Bluff	..		4,000	No	..	..	..	25,000
Prescott	2		1,400	No	No	No	No	4,000
Searcy	2		700	No	No	..	..	5,000
Texarkana	..		8,600	Yes	No	Yes	Yes	15,000
Van Buren	..		1,000	No	No	No	No	5,000
CALIFORNIA:								
Alameda	..		6,600	No	..	..	Yes	25,000
Bakersfield	..		..	..	..	..	..	18,000
Berkeley	..		11,865	Yes	No	..	..	43,000
Eureka	8	3 reels	9,900	No	..	..	..	12,000
Fresno	..		14,000	No	No	No	No	30,000
Grass Valley	4		2,800	No	No	No	No	7,000
Hanford	1		2,700	..	No	No	Yes	7,000
Long Beach	..		4,200	Partly	Yes	Yes	Yes	20,000
Los Angeles	9	Chemical	82,500	Yes	Yes	Yes	Yes	400,000
Marysville	..		3,250	No	No	No	No	6,000
Modesto	2		3,100	No	No	No	No	6,327
Oakland	..		39,200	Yes	Yes	Yes	Yes	175,000
Pasadena	..		9,000	Yes	No	Yes	No	35,000
Petaluma	6		4,500	No	..	..	..	7,000
Redlands	..		3,650	No	No	No	No	10,500
Red Bluff	1	H. & L.	2,500	No	No	No	No	4,500
Salinas	(1)	H. & L.	2,500	No	No	No	No	4,500
San Bernardino	2		3,600A	No	No	No	No	15,000
San Francisco	..		110,000	abt. 3/4	Yes	Yes	Yes	416,912
San Leandro	3		2,000	No	No	No	No	4,500
Santa Cruz	..		4,000	No	No	No	Yes	12,000
Santa Monica	2		5,000	No	No	No	No	15,000
Santa Rosa	..		4,000	No	Yes	No	Yes	10,000
Stockton	..		9,490	Partly	Yes	Yes	No	30,000
Watsonville	2		2,800	No	No	No	No	5,500
Woodland	1		2,220	No	No	No	No	4,250
COLORADO:								
Boulder	1	Service truck	7,000	No	No	Yes	No	12,000
Canon City	3		3,300	No	No	No	No	8,500
Colorado Springs	..		9,000	Yes	No	No	No	30,000
Grand Junction	2	50-ft. extension ladder	3,000	Telephone	..	..	..	8,000
Idaho Springs	5	1 H. & L.	3,000	..	..	..	..	2,500
Longmont	..		1,800	No	No	No	Yes	6,000
Pueblo	..		16,000	Yes	Yes	Yes	No	50,000
Silverton	2	H. & L.	2,500	No	No	Yes	No	2,000
Telluride	3	H. & L.	2,700	No	No	No	No	2,000
CONNECTICUT:								
Danielson	..		3,500	No	No	No	No	3,000
Derby	5	Supply Cart	5,000	No	No	No	No	8,991
East Hartford	3		4,000	No	No	No	No	9,000
Greenwich	2		2,500	No	No	No	No	18,000
Hartford	..		26,000	Yes	Yes	Yes	..	98,915
Meriden	1		10,500	Some	No	Yes	Yes	35,000
Middletown	..		5,000	No	No	No	No	11,000
Naugatuck	4		5,300	Yes	No	Yes	No	15,000
New Britain	..		10,500	Yes	No	Yes	Yes	50,000
Norwalk	..		2,200	No	No	..	..	12,000
Norwich	..		10,500	No	No	Yes	Yes	30,000
Orange	(1)		4,500	No	No	No	No	10,000
Putnam	..		4,000	No	No	No	No	8,000
Spelton	4		3,000	No	No	No	5	5,000
South Manchester	5		4,000	No	No	Yes	..	14,000
South Norwalk	..		5,800	..	Yes	Yes	..	..
Stamford	..		6,800	Partly	Yes	Yes	No	25,000
Stonington	..		2,200	No	No	No	No	2,200
Wallingford	2	Ladder	2,000	No	No	No	No	10,000
Waterbury	..		15,000	No	Yes	Yes	Yes	75,000
Windsor Lake	2	Ladder truck	1,100	No	No	No	No	4,000
DELAWARE:								
Milford	3	Ladder truck	2,000	No	No	No	No	3,500
Wilmington	..		..	No	No	Yes	No	100,000
DISTRICT OF COLUMBIA:								
Washington	..		150,000	Yes	Yes	Yes	Yes	348,500
FLORIDA:								
Gainesville	1		2,250	No	No	No	No	8,000
Jacksonville	..		17,000	No	No	Yes	No	64,900
Orlando	..		4,200	No	No	No	Yes	7,000
Palatka	6	H. & L.	2,400	No	No	No	No	6,000

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
FLORIDA (Continued):								
St. Petersburg	2	Engine & ladder truck	3,500	No	No	No	No	5,500b
Tampa	2	.....	12,000	No	No	No	Yes	50,000
GEORGIA:								
Americus .....	..	.....	3,500	No	...	...	Yes	12,000
Athens .....	..	.....	4,500	No	Yes	Yes	Yes	20,000
Atlanta .....	..	.....	25,000	Yes	No	Yes	No	154,000
Augusta .....	..	.....	12,000	Yes	Yes	Yes	Yes	55,000
Brunswick .....	..	.....	4,000	No	No	No	No	14,080
Columbus .....	..	.....	11,000	No	No	Yes	No	22,500
Cordele .....	..	.....	.....	...	...	...	...	8,000
Fort Valley	1	Hose wagon	1,000	No	No	No	No	3,000
Hawkinsville .....	..	.....	2,100	No	No	No	No	5,000
Macon .....	..	.....	.....	...	...	...	...	45,000
Newnan .....	..	.....	2,500	No	Yes	No	No	6,500
Rome .....	..	.....	9,200	Yes	No	Yes	Yes	18,000
Sandersville	3	.....	3,000	No	No	No	No	2,700
Savannah .....	..	.....	2,500	Yes	Yes	Yes	Yes	90,000
Thomasville .....	..	.....	3,000	No	No	No	No	7,000
Valdosta	(1)	.....	4,000	No	No	No	No	12,000
Waynesboro	2	Ladder truck	2,500	No	No	No	No	3,500
IDAHO:								
Lewiston	6	H. & L.	3,750	No	No	Yes	No	6,500
ILLINOIS:								
Aurora .....	..	.....	8,500	Partly	No	Yes	Yes	30,000
Bloomington .....	..	.....	6,000	No	Yes	Yes	Yes	31,000
Blue Island .....	..	.....	2,500	No	No	No	No	9,750
Canton .....	..	.....	4,200	Yes	No	Yes	No	12,000
Carlinville .....	..	Chemical	1,200	No	No	No	No	3,800
Charleston	1	Cart	1,800	No	No	No	No	7,000
Chicago .....	..	.....	298,460	Yes	Yes	Yes	Yes	2,307,638
Danville .....	..	.....	7,500	...	...	...	...	28,000
De Kalb	1	1	3,500	No	No	Yes	Yes	9,000
Du Quoin .....	..	.....	1,500	...	No	...	...	5,500
Dwight	1	.....	1,200	No	No	No	No	2,400
East St. Louis .....	..	.....	12,000	No	Yes	Yes	No	58,000
Evanston .....	..	.....	7,500	Yes	Yes	3	3	30,000
Fairbury	2	.....	1,400	No	No	No	No	2,500
Galena	3	.....	2,500	No	No	No	No	6,000
Greenville	2	Chemical	1,500	No	No	No	No	3,500
Harrisburg	2	.....	2,000	...	...	...	...	10,000
Harvard .....	..	.....	2,000	...	No	...	...	3,000
Harvey	3	.....	2,700	No	No	No	No	7,000
Hoopeston	2	.....	1,800	No	No	No	Yes	6,000
Joliet	2	.....	10,000	Yes	2	2	...	37,000
Lewistown .....	..	H. & L.	1,500	No	No	No	No	2,500
Lincoln	2	.....	2,000	No	Yes	Yes	No	11,000
Macomb .....	..	.....	1,800	Partly	...	Yes	...	6,000
Marion	2	.....	1,500	No	No	No	No	10,500
Mattoon .....	..	.....	.....	...	...	...	...	15,000
Metropolis	1	.....	3,000	No	No	No	...	5,000
Moline	1	.....	7,600	Yes	2	4	Yes	30,000
Monticello	2	Ladder truck	1,500	No	No	No	No	2,000
Mt. Carmel .....	..	.....	3,000	No	...	...	No	7,500
Mt. Olive	4	Ladder truck & hand pumping engine	2,000	No	No	No	No	3,500
Murphysboro	1	.....	2,200	No	No	No	No	13,000
Naperville	4	.....	3,000	Yes	No	No	No	4,000
Pana	3	.....	3,200	Partly c	Yes	...	...	8,000
Peoria	2	Hand engine	22,000	Yes	Yes	8	...	66,910
Peru .....	..	.....	1,700	No	No	No	No	9,000
Pinckneyville	2	.....	2,000	No	No	...	Yes	2,650
Princeton .....	..	.....	1,800	No	No	No	No	5,000
Rockford .....	..	.....	13,000	Yes	Yes	Yes	Yes	50,000
Springfield .....	..	.....	8,000	Partly	No	Yes	No	65,000
Urbana .....	..	.....	2,000	No	No	Yes	Yes	10,000
Vandalia	3	H. & L.	1,600	No	No	...	...	3,000
Warsaw	2	Engine, chemical, and ladder truck	1,400	No	No	No	No	2,254
Waukegan .....	..	.....	1,600	No	No	No	Yes	17,000
Wilmette .....	..	.....	.....	...	...	...	...	5,500
INDIANA:								
Anderson .....	..	.....	7,000	Yes	No	3	No	25,000
Attica	2	1	1,500	No	No	No	No	4,000
Brookville	5	Wagon	2,000	No	No	No	No	2,500
Clinton .....	..	.....	3,000	No	No	No	No	8,000
Covington .....	..	.....	2,000	...	...	...	...	2,500
Elwood .....	..	.....	3,000	No	No	Yes	No	1,200
Evansville .....	..	.....	15,000	Telephone	No	5	No	75,000
Fort Wayne .....	..	.....	20,000	Partly	No	Yes	No	70,000
Gas City	1	.....	1,800	No	No	No	Yes	4,200
Greencastle .....	..	.....	1,200	No	No	No	No	4,500
Huntington .....	..	.....	4,000	No	No	No	No	1,200
Kendallville	2	.....	2,400	Partly	...	...	...	5,000
Kokomo	4	.....	5,000	No	No	Yes	No	20,000
Lafayette .....	..	.....	6,000	Yes	No	Yes	No	21,000
La Porte	1	.....	5,500	No	No	No	No	12,000
Lebanon .....	..	.....	2,700	No	No	No	No	5,500
Ligonier	3	H. & L.	2,000	Partly	...	...	...	2,250
Logansport .....	..	.....	5,500	Partly	Yes	Yes	No	20,000
Marion .....	..	.....	1,300	No	No	Yes	No	24,000
Martinsville .....	..	.....	1,400	No	No	No	No	5,000
Mishawaka .....	..	.....	4,000	No	No	Yes	No	12,000
Mt. Vernon	1	.....	1,800	No	No	No	No	6,500
Muncie .....	..	.....	5,000	Yes	No	No	No	2,405
New Albany .....	..	.....	6,000	No	No	No	No	25,000
North Manchester	1	H. & L.	1,450	No	No	No	No	8,000
Peru .....	..	.....	5,000	Partly	No	Yes	2	15,000
Plymouth	2	H. & L.	2,800	No	No	No	No	5,000
Portland .....	..	.....	2,000	No	No	No	No	5,130
Princeton	4	.....	1,500	No	No	No	No	6,000
Rensselaer	2	Ladder truck	2,000	No	No	No	No	3,000
Rochester .....	..	.....	2,000	...	...	...	...	4,500
Rockville	1	H. & L.	3,000	No	No	Yes	No	3,500
Shelbyville .....	..	.....	2,850	...	...	...	...	14,000

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
INDIANA (Continued.)								
Tell City	4	H. & L.	2,500	No	No	No	No	4,000
Valparaiso	1	.....	2,000	No	No	Yes	No	8,000
Vincennes	1	.....	4,500	No	No	No	No	15,000
Wabash	1	.....	3,500	No	No	No	No	10,000
IOWA:								
Ames	1	Hose cart.	1,800	No	No	No	No	4,500
Atlantic	(3)	.....	2,100	No	No	No	No	5,000
Burlington	1	.....	12,000	Yes	Yes	Yes	...	24,500
Clarinda	1	Chemical.	2,000	No	No	No	No	5,000
Cherokee	1	.....	2,500	No	No	No	No	5,000
Cresco	2	H. & L.	1,500	No	No	No	No	3,000
Creston	2	.....	3,000	No	No	No	No	8,000
Davenport	1	.....	14,000	Yes	Yes	Yes	No	45,000
Dubuque	3	.....	11,000	No	Yes	3	No	40,000
Eagle Grove	3	H. & L.	1,600	No	No	No	No	4,000
Fairfield	3	.....	2,000	No	No	No	No	5,000
Ft. Dodge	2	H. & L.	5,000	No	No	Yes	No	15,543
Glenwood	2	.....	1,000	No	...	...	...	2,000
Guttenberg	4	H. & L. & chemical.	2,000	No	No	No	No	2,000
Indianola	2	.....	2,500	No	Yes	No	No	3,500
Iowa City	2	.....	4,500	No	No	No	No	11,000
Iowa Falls	1	.....	2,000	No	No	Yes	...	4,500
Lake City	3	.....	1,300	Yes	No	No	No	2,000
Le Mars	1	3 hose carts, H. & L.	4,000	No	No	No	No	5,000
Marengo	1	.....	1,200	No	No	No	No	2,007
Marshalltown	1	.....	3,000	No	Yes	Yes	No	14,000
Nevada	1	.....	2,100	...	...	...	...	2,942
Osage	1	.....	...	...	...	...	...	3,000
Shenandoah	2	H. & L.	2,000	No	No	No	No	5,000
Sioux City	1	.....	...	Partly	Yes	Yes	No	50,000
Storm Lake	3	H. & L.	1,500	No	No	No	No	2,500
Waterloo	1	.....	5,750	Yes	...	Yes	...	28,000
Winterset	1	.....	1,500	Telephone	No	No	No	3,000
KANSAS:								
Abilene	1	.....	2,000	Partly	No	No	No	5,000
Atchison	1	.....	5,000	Partly	...	Yes	Yes	18,000
Baldwin	2	H. & L.	1,000	No	No	No	No	1,400
Belleville	2	H. & L.	1,300	No	No	No	No	2,500
Blue Rapids	1	.....	1,200	No	No	No	No	1,900
Burlingame	1	.....	4,000	No	No	No	No	1,500
Coffeyville	1	.....	3,000	Partly	Yes	No	Yes	18,000
Concordia	3	H. & L. and chemical.	2,000	No	No	No	No	5,000
Council Grove	2	.....	1,450	No	No	No	No	32,500
El Dorado	3	.....	3,000	No	No	...	...	3,800
Eureka	2	H. & L.	1,200	...	...	...	...	2,500
Fort Scott	1	.....	2,000	No	No	Yes	No	12,340
Galena	5	Carts.	1,800	No	No	No	No	7,000
Hiawatha	2	H. & L. and hose and L.	2,000	No	No	No	No	3,500
Holsington	2	Chemical.	1,300	No	No	No	No	3,000
Holton	1	.....	1,300	No	No	No	No	3,500
Horton	3	.....	1,800	No	No	No	No	4,000
Hutchison	1	.....	6,000	No	No	No	No	18,000
Independence	1	.....	2,000	No	No	No	No	10,000
Iola	1	.....	2,000	...	...	...	...	9,234
La Harpe	2	.....	1,200	No	No	No	No	3,000
Leavenworth	1	.....	4,500	Yes	No	Yes	No	24,000
McPherson	1	2 hose carts.	2,500	Partly	...	...	...	3,500
Marysville	3	H. & L.	2,650	No	No	No	No	2,500
Olathe	2	.....	2,450	No	No	No	No	3,300
Ottawa	2	.....	3,000	No	...	...	...	8,000
Parsons	1	.....	4,500	No	No	Yes	No	19,040
Pittsburg	1	.....	47,000	Partly	No	Yes	No	18,000
Pleasanton	1	.....	1,200	No	No	No	No	1,800
Salina	1	.....	3,000	...	Yes	Yes	Yes	10,000
Topeka	1	.....	9,350	No	No	Yes	Yes	52,000
KENTUCKY:								
Bowling Green	2	.....	4,000	No	No	Yes	No	11,000
Carlisle	2	H. & L.	950	No	No	No	No	2,500
Carrollton	1	.....	1,500	No	No	No	No	3,300
Covington	1	.....	12,900	No	Yes	Yes	No	53,270
Cynthiana	2	H. & L.	1,000	No	No	No	No	5,000
Danville	1	.....	2,000	No	No	Yes	No	6,000
Lexington	1	.....	10,000	No	No	Yes	Yes	35,000
Louisville	1	.....	35,000	Yes	...	6	...	250,000
Nicholasville	1	.....	...	...	...	...	...	3,000
Paducah	1	.....	10,000	No	No	No	Yes	30,000
Princeton	1	.....	1,000	...	No	...	Yes	5,000
Richmond	1	.....	2,000	...	Yes	...	Yes	5,500
Shelbyville	1	.....	1,500	No	No	Yes	Yes	4,000
LOUISIANA:								
Baton Rouge	1	.....	3,000	No	No	No	No	17,000
Cranby	1	.....	28,000	No	No	...	...	50,050
New Orleans	1	.....	45,000	Yes	...	...	...	339,075
Thibodaux	3	H. & L.	1,250	No	No	No	No	4,000
MAINE:								
Auburn	1	Hand tub	11,000	No	No	Yes	No	17,000
Augusta	4	.....	8,000	No	No	Yes	No	13,000
Bangor	1	.....	17,000	No	No	Yes	Yes	27,000
Belfast	2	.....	6,000	No	No	Yes	No	5,000
Biddeford	3	.....	7,000	No	No	2	No	18,000
Brunswick	1	.....	...	...	...	...	...	7,500
Gardiner	2	.....	5,000	No	No	No	No	6,000
Hallowell	4	.....	5,000	No	No	...	...	2,600
Norway	1	3 hose carts.	3,500	No	No	Yes	No	4,200
Pittsfield	6	.....	2,500	No	No	No	No	3,500
Rumford	6	.....	7,000	No	No	Yes	No	8,000
MARYLAND:								
Annapolis	(1)	.....	4,000	Partly	...	...	Yes	10,000
Baltimore	1	.....	275,000	Yes	2	15	4	558,485
Crisfield	4	.....	2,500	No	No	No	No	4,000
Cumberland	3	.....	6,000	No	No	No	No	24,000
Frostburg	4	3.	2,500	No	No	No	No	8,000
Westminster	5	H. & L.	3,000	No	...	...	...	3,600

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
MASSACHUSETTS:								
Adams	..	..	5,200	No	No	Yes	No	14,000
Attleboro	2	..	11,000	No	No	Yes	No	20,000
Beverly	..	..	14,000	Yes	No	Yes	No	20,000
Boston	..	..	..	Yes	No	Yes	..	700,000
Bridgewater	1	..	4,000	No	No	No	No	6,000
Brockton	3	Hand engine	14,000	Yes	Yes	Yes	Yes	63,000
Brookline	..	..	18,000	Yes	..	2	2	32,000
Cambridge	..	..	16,000	No	No	Yes	Yes	104,000
Chelsea	..	..	10,000	No	Yes	Yes	Yes	35,000
Chicopee	..	..	8,000	No	No	Yes	No	26,000
Dalton	..	..	2,000	No	..	..	..	3,500
Danvers	4	..	15,000	No	No	No	Yes	9,500
Fitchburg	..	..	15,000	Partly	No	3	Yes	38,000
Gloucester	..	..	18,500	..	..	Yes	..	28,000
Greenfield	..	Engine	6,000	Yes	No	Yes	Yes	10,000
Haverhill	4	2 hand tubs	..	Yes	No	2	..	44,115
Hingham	..	..	..	..	..	..	..	6,000
Holyoke	..	..	25,000	No	No	2	3	60,000
Lawrence	..	..	19,500	Partly	Yes	Yes	No	85,892
Lowell	..	..	20,000	Yes	Yes	Yes	No	106,294
Lynn	..	..	18,000	Yes	No	Yes	Yes	95,000
Marblehead	..	..	6,500	Partly	..	..	..	7,500
Marlboro	..	..	9,000	Yes	..	Yes	..	15,000
Maynard	..	..	2,000	No	No	No	No	6,500
Medford	..	..	9,000	No	Yes	Yes	Yes	25,000
Middleboro	4	Hose, chemical, H. & L.	5,000	No	No	Yes	Yes	8,000
Milford	..	..	6,500	No	No	Yes	No	13,000
Monson	3	2 chemicals	2,000	No	No	No	No	4,343
New Bedford	..	..	18,500	Yes	No	4	Yes	110,000
Newburyport	..	..	9,500	No	No	Yes	No	16,000
Newton	..	..	17,000	Yes	No	Yes	Yes	45,000
North Adams	3	H. & L.	6,000	No	No	2	..	25,000
North Attleboro	..	..	..	..	..	..	..	10,000
North Brookfield	..	..	2,500	No	No	No	No	3,100
Orange	2	..	7,800	No	No	Yes	Yes	5,300
Peabody	3	..	15,000	No	..	Yes	2	15,721
Pittsfield	..	..	10,000	Yes d	..	Yes	..	36,000
Plymouth	..	..	5,000	Yes	No	Yes	No	13,000
Quincy	..	..	12,000	Yes	No	Yes	..	30,000
Reading	..	..	9,000	No	No	Yes	No	6,500
Salem	..	..	15,500	No	..	Yes	Yes	43,000
Somerville	..	..	10,000	Yes	No	Yes	..	78,000
Springfield	1	..	23,000	Yes	Yes	Yes	Yes	90,000
Swampscott	..	..	5,000	No	No	..	Yes	5,500
Taunton	3	..	14,500	No	No	Yes	Yes	35,000
Wakefield	..	..	5,600	Yes	..	Yes	Yes	11,500
Waltham	..	..	10,000	Partly	No	Yes	Yes	29,000
Ware	4	..	4,000	No	No	Yes	No	8,700
Westfield	1	..	4,500	Yes	No	Yes	2	16,000
Worcester	..	..	35,000	Most all	No	6	No	150,000
MICHIGAN:								
Adrian	..	..	9,000	No	Yes	Yes	..	12,000
Alma	1	..	2,500	Yes	..	..	..	3,500
Alpena	..	..	7,500	No	No	Yes	No	12,000
Ann Arbor	..	..	6,000	Partly	..	Yes	..	17,000
Battle Creek	..	..	9,000	Partly	No	Yes	Yes	30,000
Benton Harbor	(2)	..	3,200	Telephone	No	Yes	No	10,000
Bessemer	1	..	5,000	No	No	Yes	No	5,000
Big Rapids	4	..	3,500	No	No	Yes	No	5,000
Detroit	..	..	..	Yes	Yes	Yes	Yes	510,000
Escanaba	..	..	5,000	No	No	Yes	No	14,000
Fenton	..	..	2,300	No	No	..	..	2,300
Flint	..	..	8,200	..	No e	No e	No e	38,000
Grand Rapids	..	..	..	Yes	Yes	Yes	Yes	112,000
Jackson	..	..	13,000	Yes	No	Yes	Yes	35,000
Kalamazoo	..	..	..	Yes	No	8	No	45,000
Lansing	..	..	8,000	Partly	Yes	3	2	40,000
Lapeer	2	..	3,000	No	No	No	No	4,000
Ludington	(2)	..	5,500	No	..	..	..	9,700
Manistique	1	..	3,400	No	No	..	..	5,500
Marshall	..	Hose wagon	5,000	No	No	No	No	5,000
Menominee	2	..	5,000	No	No	Yes	No	11,000
Monroe	..	2 chemicals	5,000	No	No	No	No	9,000
Mt. Clemens	..	..	3,500	Yes	No	Yes	No	9,000
Muskegon	..	..	..	No	..	Yes	..	24,062
Otsego	..	..	2,500	No	No	No	No	3,000
Petoskey	1	2 chemicals	3,500	No	No	2	Yes	5,000
Pontiac	..	..	4,200	..	No	Yes	..	1,700
Port Huron	..	..	7,000	Yes	No	Yes	No	25,000
St. Joseph	..	2 chemicals	3,200	Partly	No	No	No	6,000
Three Rivers	2	..	3,000	No	No	No	No	5,000
Traverse City	4	H. & L.	6,000	No	No	Yes	No	13,000
MINNESOTA:								
Albert Lea	..	..	3,000	Telephone	..	..	..	8,000
Alexandria	..	..	2,000	No	..	..	..	3,001
Anoka	..	..	4,000	Yes	No	Yes	..	3,972
Bemidji	..	..	3,500	No	..	Yes	Yes	7,000
Brainerd	3	..	4,500	Yes	..	2	..	9,000
Cloquet	4	..	4,200	No	No	Yes	No	7,031
Detroit	..	..	1,500	No	..	..	..	2,800
Faribault	..	..	3,000	Yes	..	Yes	..	9,800
Hastings	3	H. & L.	2,500	No	No	No	No	4,000
Little Falls	4	8	6,000	No	No	No	No	6,500
Marshall	1	..	2,200	Yes	No	..	Yes	2,800
Minneapolis	..	..	55,642	Yes	No	Yes	Yes	310,000
New Ulm	1	..	3,500	Partly	..	..	..	6,000
Owatonna	..	2	2,300	Yes	..	Yes	Yes	6,500
Red Wing	..	..	7,000	Partly	No	Yes	No	9,500
Rochester	..	..	4,000	Partly	No	Yes	Yes	8,000
St. Cloud	1	..	3,400	Partly	..	..	..	12,345
St. Paul	..	..	60,000	Yes	No	Yes	Yes	225,000
Sauk Center	..	..	2,500	No	No	No	No	2,500
Stillwater	..	..	5,500	Partly	No	Yes	No	10,193
Thief River Falls	..	..	2,000	No	No	..	..	5,000
Two Harbors	2	..	3,000	No	No	No	No	5,000
Winona	..	..	8,000	Partly	No	Yes	No	22,000

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Population.
MISSISSIPPI:								
Aberdeen	4	.....	2,500	No	No	No	No	5,000
Greenville .....	..	.....	5,900	No	No	No	No	10,000
Jackson .....	..	.....	6,380	No	Yes	No	Yes	21,262
Port Gibson	3	H. & L.	1,600	No	No	No	No	2,357
MISSOURI:								
Cameron	2	Hose	1,200	No	No	Yes	No	4,500
Carrollton .....	..	.....	2,500	Yes	No	Yes	Yes	4,000
Carthage	1	.....	2,300	No	Yes	Yes	..	11,000
Caruthersville .....	..	.....	2,000	No	No	No	No	5,000
Chillicothe .....	..	.....	2,000	No	..	Yes	..	9,000
Clinton .....	..	.....	2,000	No	No	No	Yes	6,000
Hannibal .....	..	.....	4,000	Partly	No	Yes	No	20,000
Independence .....	..	.....	2,000	Yes	No	Yes	No	11,000
Jefferson	3	.....	3,500	No	..	..	Yes	1,300
Kansas City .....	..	.....	40,000	Yes	Yes	Yes	No	249,381
Kirksville .....	..	1	1,500	No	No	No	No	9,000
Lamar	1	.....	800	No	No	..	3	4,000
Lebanon	1	.....	1,000	No	No	No	No	2,300
Lexington .....	..	.....	650	No	Yes	..	..	7,000
Maryville .....	..	.....	2,000	Partly	..	..	..	6,000
Monroe City .....	..	.....	700	No	No	No	No	2,100
Neosho .....	..	3 hose carts ..	1,200	No	No	No	No	4,000
Pleasant Hill .....	..	.....	600	No	No	No	No	2,200
Princeton	1	.....	1,000	No	No	No	No	2,000
St. Joseph	(1)	.....	24,000	Mostly	No	Yes	No	80,000
St. Louis .....	..	.....	..	Yes	No	Yes	No	750,000
Sedalia .....	..	.....	3,200	No	No	No	No	18,000
Unionville	1	Cart	1,200	No	No	No	No	2,300
Warrensburg .....	..	.....	2,000	No	No	No	No	6,000
Washington	6	2 H. & L., 1 hand pump...	1,800	No	No	No	No	4,000
Webb City	1	.....	2,000	No	No	No	Yes	15,000
MONTANA:								
Bozeman	2	H. & L.	3,000	No	Yes	No	Yes	7,000
Livingston .....	..	.....	4,000	No	Yes	Yes	No	5,359
Missoula	1	.....	3,000	Partly	No	No	Yes	12,680
Red Lodge .....	..	.....	2,000	No	No	No	No	5,000
NEBRASKA:								
Ashland	3	.....	1,800	..	No	No	No	1,450
Beatrice	4	2 H. & L.	3,000	No	No	Yes	No	10,000
Columbus	4	H. & L.	2,200	No	Yes	Yes	Yes	5,500
David City .....	..	.....	1,300	No	No	..	..	3,000
Grand Island	4	.....	4,000	Partly	Yes	..	..	11,000
Hastings .....	..	.....	4,000	Partly	Yes	Yes	Yes	10,000
Kearney	4	H. & L.	3,000	No	No	No	No	8,000
Lincoln .....	..	.....	10,000	Partly	No	Yes	No	43,970
Nebraska City .....	..	.....	3,500	Partly	No	No	No	5,488
Omaha .....	..	.....	28,853	Mostly	Yes	6	..	126,000
Pawnee City	2	H. & L.	1,000	No	No	..	..	1,700
Schuyler	3	Chemical, H. & L.	1,500	No f	No	No	No	3,000
South Omaha .....	..	.....	7,800	Yes	Yes	..	..	26,000
Superior	2	Chemical	900	No	No	No	..	3,000
Wahoo	3	.....	2,500	No	No	No	No	2,168
West Point	3	H. & L.	1,800	No	No	No	No	2,000
York	3	H. & L.	2,500	No	No	Yes	No	8,000
NEVADA:								
Reno .....	..	.....	4,350	Yes	Yes	Yes	..	15,000
NEW HAMPSHIRE:								
Berlin .....	..	.....	6,000	Partly	No	Yes	No	14,000
Concord .....	..	Hand tub, hose wagon, Chemical	14,000	No	No	Yes	No	22,000
Franklin	4	Hand tub	4,500	No	No	Yes	No	7,000
Laconia .....	..	.....	..	..	..	..	..	12,000
Manchester .....	..	.....	15,000	No f	..	4	..	70,063
Nashua .....	..	.....	10,000	Yes	No	Yes	No	27,000
Newport .....	..	.....	2,700	No	No	No	No	4,000
Rochester	3	Hand tub	5,500	No	No	Yes	No	9,000
NEW JERSEY:								
Atlantic City .....	..	.....	18,000	Mostly	No	No	Yes	49,000
Bayonne .....	..	.....	12,000	No	2	No	No	60,000
Bordentown .....	..	Hand engine	2,500	No	No	No	No	4,500
East Orange .....	..	.....	..	Partly	No	No	No	35,000
Elizabeth .....	..	.....	..	..	..	4	2	80,000
Englewood	3	.....	5,000	No	No	No	No	10,500
Freehold	1	.....	2,000	Telephone	No	No	Yes	4,000
Glen Ridge .....	..	.....	3,200	Mostly	No	No	Yes	3,600
Hackensack .....	..	.....	6,000	No	Yes	Yes	2	15,000
Irvington .....	..	.....	4,000	No	No	No	No	13,000
Jersey City .....	..	.....	27,000	..	Yes	Yes	Yes	267,700
Kearney	1	.....	7,400	Partly	No	No	Yes	20,000
Key Port .....	..	.....	3,000	No	No	No	No	4,000
Lambertville .....	..	.....	3,000	No	Yes	No	No	5,000
Madison .....	..	.....	3,500	Yes	No	No	Yes	5,000
Morristown .....	..	.....	6,000	Yes	No	No	2	13,000
Newark .....	..	.....	..	..	..	..	..	350,000
Passaic .....	..	.....	8,000	Partly	..	Yes	Yes	60,000
Paterson .....	..	.....	22,500	Mostly	Yes	Yes	Yes	130,000
Phillipsburg .....	..	4 hose wagons	5,100	No	No	Yes	No	3,800
Ridgewood .....	..	.....	4,000	No	No	Yes	Yes	6,500
South Orange .....	..	.....	3,700	Yes	No	No	No	7,000
Summit .....	..	.....	600	No	No	2	3	9,000
Westfield .....	..	.....	4,500	No	No	Yes	Yes	7,500
West Orange .....	..	.....	7,500	No	No	No	Yes	11,000
Wharton .....	..	.....	1,000	..	..	..	..	3,000
Woodbridge	1	.....	3,000	Partly	No	No	No	4,000
Woodbury	2	.....	3,000	..	No	No	No	5,000

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
NEW MEXICO:								
Albuquerque	..	..	4,300	..	..	..	..	11,020
E. Las Vegas	..	..	1,200	No	No	No	No	6,000
Katon	1	..	2,000	No	No	No	No	7,000
Roswell	..	..	4,000	No	No	Yes	No	8,000
NEW YORK:								
Addison	6	H. & L., Chemical	2,400	No	No	Yes	No	2,200
Albany	..	..	23,000	Yes	..	Yes	..	100,200
Amsterdam	3	..	10,000	No	No	3	2	35,000
Athens	..	..	2,150	No	No	No	No	2,000
Auburn	..	..	8,500	Yes	Yes	Yes	Yes	34,668
Ballston Spa	3	2 pumping engines, hose wagon, ladder, truck	4,000	Partly	No	No	No	4,100
Binghamton	..	..	11,000	Partly	No	Yes	Yes	50,000
Canajoharie	5	H. & L.	..	Yes	No	Yes	No	3,000
Canton	2	..	3,300	No	No	..	..	3,000
Cheoes	1	Hose cart	9,500	No	No	Yes	Yes	24,709
Delhi	6	2 H. & L.	2,500	No	No	No	No	1,800
Dobbs Ferry	2	..	2,500	No	No	No	Yes	3,500
Dunkirk	1	..	18,000	..	Yes	..	..	17,000
Elmira	..	..	6,000	No	No	Yes	No	37,000
Frankfort	..	..	2,500	No	No	No	No	3,590
Fredonia	2	2 hose wagons	3,000	No	No	No	No	6,500
Fulton	..	..	2,650	No	No	No	No	11,000
Glens Falls	2	..	6,000	Yes	Yes	Yes	No	16,000
Gloversville	1	..	6,000	No	Yes	Yes	No	20,000
Goshen	2	..	4,500	No	No	No	Yes	3,500
Gowanda	..	6	5,000	No	..	..	..	2,500
Granville	2	Chemical, H. & L.	4,000	No	No	No	No	4,000
Green Island	..	..	3,500	No	No	No	No	5,000
Herkimer	4	H. & L.	3,300	Partly	No	Yes	No	8,000
Homer	..	..	3,500	No	No	No	No	3,000
Hoosick Falls	1	..	500	No	No	No	No	6,000
Hornell	4	..	6,500	Partly	..	Yes	..	15,000
Ithaca	1(4)	..	12,000	Yes	No	Yes	Yes	18,000
Jamestown	..	..	7,000	No	Yes	Yes	No	35,000
Johnstown	..	4 hose carts	6,000	No	No	Yes	No	12,000
Kingston	..	..	8,000	No	No	Yes	Yes	27,000
Le Roy	2	hose cart	2,500	Telephone	No	No	No	4,500
Lowville	7	..	3,250	Telephone	No	Yes	No	4,000
Malone	1	..	5,000	No	Yes	Yes	No	7,000
Middletown	..	..	8,000	No	No	No	2	18,000
Newark	3	..	3,500	No	No	No	No	6,800
Newburgh	..	..	9,100	Yes	No	..	..	30,000
New Rochelle	..	..	6,500	Yes	No	Yes	Yes	23,867
Niagara Falls	..	..	12,600	Partly	Yes	3	Yes	35,000
Ogdensburg	..	..	5,000	No	No	No	No	16,000
Oneida	..	..	3,000	No	No	Yes	No	9,500
Oswego	..	..	7,000	Partly	No	3	No	25,000
Owego	..	Hose carriages, wagons and jumpers	4,500	Partly	No	Yes	No	5,000
Peekskill	..	..	4,000	Telephone	Yes	Yes	No	16,000
Penn Yan	..	..	2,200	Yes	No	Yes	Yes	5,000
Plattsburg	2	..	4,200	No	No	Yes	No	12,000
Potsdam	..	..	2,500	No	No	Yes	..	5,000
Poughkeepsie	..	..	..	Yes	Yes	No	No	30,000
Rochester	..	..	62,150	Mostly	Yes	Yes	No	225,000
Salamanca	7	..	5,000	Yes	..	..	..	7,000
Saratoga Springs	..	..	6,200	No	No	Yes	No	13,000
Schenectady	..	..	20,000	Yes	Yes	Yes	Yes	78,000
Southampton	9	..	4,500	Yes	..	..	..	2,500
Syracuse	..	..	24,000	No	No	Yes	Yes	137,249
Troy	..	..	26,000	No	No	3	2	80,000
Utica	..	..	18,600	Partly	..	Yes	No	74,419
Yonkers	5	Chemical engine	16,000	No	No	Yes	Yes	85,000
NORTH CAROLINA:								
Charlotte	..	..	6,000	No	Yes	..	..	45,000
Elizabeth City	..	..	2,500	No	No	No	No	9,000
Greensboro	1	..	5,000	Yes	No	Yes	..	17,000
Greenville	5	Steam engine	3,000	No	No	No	No	4,900
Henderson	..	..	2,200	No	No	No	No	8,000
Hickory	..	..	2,000	No	No	No	No	5,000
New Bern	..	..	5,000	No	No	No	No	16,000
Raleigh	..	..	7,000	No	No	e	e	20,000
Washington	..	..	..	..	..	..	..	7,000
NORTH DAKOTA:								
Bismarck	2	..	3,000	No	..	..	..	6,000
Dickinson	2	H. & L.	1,700	No	..	Yes	..	4,000
Madison	3(1)	H. & L.	1,800	No	No	No	No	5,048
OHIO:								
Akron	..	..	15,000	Yes	..	3	2	85,000
Alliance	..	..	4,500	No	2	Yes	Yes	15,143
Ashtabula	2	..	6,000	No	No	No	No	23,000
Bellaire	5	Chemical, H. & L.	5,000	No	No	Yes	No	13,000
Bellefontaine	..	..	3,800	No	..	..	..	9,000
Bellevue	..	..	..	..	..	..	..	5,206
Bucyrus	1	..	3,500	Telephone	Yes	No	Yes	8,500
Celina	..	..	2,500	No	No	No	No	5,428
Circleville	..	..	3,000	No	No	Yes	No	7,000
Cleveland	..	..	52,000	Yes	..	Yes	Yes	600,000
Columbus	..	..	32,800	No	No	Yes	Yes	181,000
Conneaut	2	..	4,000	No	No	Yes	Yes	10,000
Covington	3	2 steamers	2,500	No	No	No	No	2,000
Defiance	1	..	3,500	No	No	Yes	Yes	8,000
Dennison	8	Ladder truck, chemical	4,000	No	No	No	No	4,200
East Cleveland	..	..	2,000	..	..	..	..	12,000
Elyria	..	..	5,400	..	..	..	..	15,000
Gallipolis	..	..	3,000	No	No	Yes	No	7,000
Greenfield	..	..	3,000	..	..	..	..	4,000
Hicksville	2	Ladder truck	1,800	No	No	No	No	3,000
Kenton	..	..	..	..	..	..	..	7,500
Lancaster	..	..	3,000	No	..	..	..	14,000
Lebanon	1	Hose wagon	3,100	No	No	No	No	3,700

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
OHIO (Continued.)								
Lima .....	..	.....	9,500	No	No	2	No	33,000
Lorain .....	..	.....	10,000	No	No	Yes	Yes	28,883
Mansfield .....	..	.....	7,000	No	No	No	Yes	20,760
Marletta .....	..	.....	4,200	No	Yes	Yes	Yes	15,000
Marion	1	.....	5,700	No	No	2	2	18,000
Middletown .....	..	.....	5,000	No	No	No	Yes	15,000
Mt. Vernon .....	..	.....	3,500	No	No	No	No	10,000
Napoleon .....	..	.....	2,500	No	No	No	No	4,700
Newburgh .....	..	.....	1,600	No	..	..	Yes	7,500
Norwalk .....	..	.....	3,750	No	No	No	Yes	8,500
Norwood .....	..	.....	3,500	No	No	Yes	Yes	20,000
Oberlin	1	.....	3,000	Telephone	No	No	..	4,500
Ottawa .....	..	.....	2,000	No	No	No	No	2,500
Port Clinton	3	Ladder truck, chemical.	2,600	No	No	No	No	3,300
Portsmouth	2	.....	6,000	No	No	Yes	No	30,000
Rockport .....	..	.....	3,000	..	..	..	..	3,600
St. Bernard	3	.....	3,200	..	No	No	Yes	5,200
Tiffin	(3)	.....	4,650	No	Yes	Yes	No	12,000
Toledo .....	..	.....	..	..	..	..	..	200,000
Toronto	1	H. & L.	1,000	No	..	..	..	4,600
Urbana .....	..	.....	3,000	No	..	..	..	8,500
Versailles	2	Ladder truck.	1,200	No	No	No	No	1,700
Warren .....	..	.....	42,000	No	No	Yes	Yes	15,000
Wauseon	2	.....	1,500	No	No	No	No	2,500
Youngstown .....	..	.....	18,000	Yes	No	3	..	90,000
OKLAHOMA:								
Blackwell	1	.....	2,500	No	No	No	No	3,500
Chandler	2	.....	500	No	No	No	No	3,224
Elk City .....	..	.....	1,400	No	No	No	No	4,800
Enid	1	.....	4,550	No	No	No	Yes	14,000
Mangum	1	.....	2,000	No	No	No	No	5,000
McAlester .....	..	.....	4,000	No	No	No	No	15,000
Muskogee .....	..	.....	8,000	Partly	Yes	Yes	Yes	36,000
Nowata .....	..	.....	2,000	No	No	No	No	5,000
Oklahoma City .....	..	.....	26,000	No	Yes	Yes	Yes	70,000
Pauls Valley .....	..	.....	..	..	No	No	No	3,500
Pawhuska	2	.....	1,100	No	No	No	No	3,200
Perry	1	.....	2,200	No	No	No	No	3,133
Shawnee .....	..	.....	6,000	No	No	No	No	15,000
Sulphur	2	.....	2,200	No	No	Yes	No	4,300
Tahlequah .....	..	.....	1,500	No	No	No	No	3,500
Tulsa .....	..	.....	12,000	..	Yes	No	Yes	30,000
Vinita .....	..	.....	2,000	No	No	No	No	5,000
Wynne Wood	2	.....	2,000	No	No	No	No	3,500
OREGON:								
Astoria	6	.....	9,500	No	No	Yes	No	10,000
Baker	5	.....	6,250	No	No	2	..	8,000
Grants Pass	3	H. & L.	2,500	Yes	No	No	No	5,000
Portland	1	.....	64,795	Yes	Yes	Yes	Yes	225,000
PENNSYLVANIA:								
Allentown .....	..	.....	7,500	..	No	No	No	54,000
Altoona .....	..	.....	16,000	Yes	No	Yes	No	60,000
Ashley .....	..	.....	1,500	No	No	No	No	5,600
Beaver	1	H. & L.	2,500	No	No	No	No	3,000
Beaver Falls	4	.....	6,000	No	No	Yes	Yes	12,000
Bloomsburg	6	.....	2,800	No	No	No	No	8,000
Bristol	2	.....	6,000	No	No	No	Yes	10,000
Brookville .....	..	3 hose carts.	1,800	No	No	No	No	4,000
Butler	2	.....	7,000	Partly	Yes	..	Yes	22,000
Carbondale	2	.....	4,500	No	No	Yes	No	18,000
Carlisle	1	.....	3,500	No	No	No	No	11,000
Coatesville	2	.....	2,400	No	No	Yes	No	12,000
Cornellsville	4	.....	4,500	No	Yes	..	..	12,845
Conshohocken	1	.....	3,000	No	No	No	No	7,500
Corapolis	1	.....	1,800	No	No	No	No	6,543
Doylestown	3	Chemical.	2,000	..	..	..	..	4,000
Dunmore	2	.....	8,000	No	No	No	No	18,000
Easton	1	.....	11,000	No	No	Yes	No	28,525
East Stroudsburg	3	H. & L.	1,750	No	No	No	No	35,000
Etna	1	2 H. & L., 2 hose car- riages.	4,000	No	No	No	No	7,000
Farrell .....	..	.....	5,000	No	No	No	No	11,000
Forest City	1	.....	3,000	No	No	..	..	7,000
Franklin	1	.....	4,000	No	Yes	Yes	Yes	9,797
Girardville .....	..	.....	1,500	..	..	..	..	5,000
Harrisburg .....	..	.....	..	..	..	..	..	70,000
Honesdale	5	1.	5,000	No	No	..	..	6,000
Jeannette	5	.....	2,500	No	No	..	..	9,000
Jersey Shore .....	..	.....	4,000	..	..	Yes	..	7,500
Johnstown .....	..	.....	15,500	No	No	Yes	Yes	75,000
Lansdowne .....	..	.....	2,500	Yes	..	..	..	5,500
Latrobe	5	.....	3,500	No	No	No	Yes	9,000
Lewistown	6	H. & L.	3,200	No	No	No	No	10,000
Luzerne	1	H. & L.	1,800	No	No	No	No	4,000
Lykens	2	.....	1,300	No	No	No	No	5,000
Mauch Chunk	3	.....	4,000	No	No	No	No	4,000
McDonald	2	Chemical.	1,700	No	No	No	No	3,500
McKeesport .....	..	.....	9,500	Yes	..	Yes	..	42,694
Meadville	4	.....	8,000	No	Yes	Yes	Yes	13,500
Mechanicsburg	3	2 steam engines, H. & L., chemical.	2,200	No	No	No	No	5,000
Mercer .....	..	.....	500	No	No	..	..	2,000
Mcnessen	5	.....	3,500	No	No	No	No	13,000
Montrose	2	H. & S., chemical.	1,800	No	No	No	No	3,000
Mt. Carmel	1	.....	3,700	No	No	No	No	18,000
Mount Pleasant .....	..	.....	..	..	No	No	No	6,500
Nanticoke	2	.....	5,000	No	No	No	No	20,000
New Brighton .....	..	.....	4,450	No	No	..	Yes	9,000
New Castle .....	..	.....	1,000	Partly	No	3	2	4,000
Norristown .....	..	.....	8,000	No	No	Yes	No	29,000
Oil City	2	.....	6,300	No	2	..	..	20,000
Olyphant	3	.....	3,000	No	No	Yes	No	10,000
Philadelphia .....	..	.....	..	Partly	Yes	Yes	..	1,600,000

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels.	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Population.
PENNSYLVANIA (Continued):								
Phillipsburg	..	.....	4,000	No	...	...	...	4,200
Pittsburg	..	.....	132,460	Yes	Yes	Yes	Yes	565,000
Pottstown	..	.....	3,500	No	...	...	...	17,000
Pottsville	2	.....	9,000	No	No	Yes	Yes	21,000
Rankin	1	.....	5,000	No	No	No	Yes	6,000
Reading	..	.....	20,000	Partly	No	Yes	Yes	100,000
Ridgway	3	.....	6,000	No	No	No	No	6,000
St. Clair	..	5 hose carts.	2,000	No	No	No	No	7,000
Scranton	..	.....	17,000	Yes	...	3	Yes	132,000
Shamokin	..	Hose carriage.	5,000	No	No	Yes	No	23,000
Sharon	..	.....	3,000	No	No	Yes	No	15,000
South Fork	1	.....	1,800	No	No	No	No	6,000
Stroudsburg	..	.....	.....	...	...	...	...	5,000
Sunbury	2	.....	10,000	No	No	Yes	...	15,500
Susquehanna	..	.....	4,500	No	Yes	No	No	4,000
Towanda	..	.....	3,700	No	...	...	...	4,350
Warren	..	.....	4,200	Partly	No	Yes	...	15,000
Washington	6	.....	5,400	No	No	Yes	Yes	22,000
Watsonstown	3	.....	2,000	...	...	...	...	2,000
Westchester	3	2 pumping engines, chemical and hose, 1 ladder truck.	4,600	No	No	No	Yes	12,000
Wilkes Barre	..	.....	15,000	No	Yes	2	Yes	70,000
RHODE ISLAND:								
East Providence	6	3 hose wagons, 3 ladder trucks.	7,450	No	No	Yes	No	16,000
Pawtucket	..	.....	15,000	No	Yes	4	...	53,000
Providence	..	.....	36,821	Yes	No	Yes	No	324,326
Westerly	..	.....	4,500	...	...	...	...	14,000
SOUTH CAROLINA:								
Aiken	2	Ladder truck.	2,000	No	No	No	No	3,800
Beaufort	2	H. & L.	2,400	No	...	...	...	4,000
Charleston	..	.....	15,400	Yes	Yes	Yes	...	58,833
Chester	1	.....	2,000	No	No	No	No	7,000
Darlington	2	.....	3,000	No	No	No	No	6,000
Greenville	..	.....	4,000	No	No	Yes	Yes	20,000
Orangeburg	(4)	.....	3,500	No	No	No	No	7,456
Spartansburg	1	.....	5,000	No	No	No	No	18,000
SOUTH DAKOTA:								
Aberdeen	..	.....	4,500	...	Yes	Yes	Yes	9,800
Vermillion	2	H. & L.	500	No	No	No	No	2,500
Yankton	3	.....	3,000	No	...	...	...	5,000
TENNESSEE:								
Bristol	..	.....	4,000	No	...	...	...	20,000
Chattanooga	..	.....	14,500	...	No	Yes	No	55,000
Cleveland	..	.....	2,000	No	No	Yes	Yes	8,000
Columbia	3	.....	2,000	No	Yes	Yes	Yes	8,000
Covington	1	.....	1,750	No	No	No	No	3,000
Fayetteville	1	.....	2,300	No	No	No	No	3,539
Gallatin	1	.....	750	No	No	No	No	3,000
Greenville	4	Hose cart, H. & L.	1,250	No	No	No	No	4,500
Nashville	..	.....	23,000	Yes	No	Yes	No	114,000
Tullahoma	3	.....	3,500	...	...	...	...	4,500
Union City	1	.....	1,400	No	No	No	No	5,000
TEXAS:								
Austin	1	.....	13,500	Yes	No	No	No	35,000
Bonham	..	.....	1,400	No	No	No	No	5,000
Comanche	1	.....	1,600	No	No	No	No	4,000
Dallas	..	.....	30,000	No	No	Yes	Yes	102,000
Eagle Pass	2	H. & L., hand pump.	1,200	No	No	No	No	4,000
El Paso	..	.....	10,000	Partly	...	Yes	Yes	40,000
Galveston	..	.....	17,050	Yes	...	...	...	10,000
Georgetown	2	.....	2,000	No	No	Yes	No	42,586
Gonzales	1	.....	4,400	No	No	No	No	5,000
Honeygrove	..	.....	2,200	No	No	No	No	3,139
Houston	..	.....	26,550	Mostly	No	No	Yes	35,000
Kaufman	3	H. & L.	1,500	No	Yes	...	...	100,000
Lufkin	2	.....	2,000	No	No	No	No	2,000
McKinney	..	.....	2,000	No	No	No	No	3,500
Quanah	1	.....	1,500	No	No	No	No	7,000
Longview	..	.....	1,400	No	...	...	...	3,500
San Marcos	..	.....	1,400	No	No	No	No	8,000
Sherman	..	.....	6,600	Partly	Yes	No	Yes	10,240
Smithville	2	H. & L.	1,500	No	No	No	No	4,500
Terrell	..	.....	2,000	No	No	Yes	...	8,500
Tyler	..	.....	3,200	No	No	...	No	7,000
Victoria	..	.....	2,500	No	...	...	...	3,500
Waxahachie	..	.....	2,300	No	...	...	...	8,000
Yoakum	2	.....	2,600	No	No	No	No	6,500
UTAH:								
Logan	..	Hand pump.	2,000	No	e	No	No	10,000
Nephi	..	Hose cart, H. & L., chemical.	500	No	No	No	No	3,000
Ogden	1	Hand pump, H. & L.	7,000	No	No	Yes	Yes	32,000
Park City	..	.....	850	No	No	No	No	4,000
Pleasant Grove	..	Comb. hose & chem.	15,000	Yes	Yes	Yes	Yes	2,750
Salt Lake	..	.....	.....	...	...	...	...	100,000
VERMONT:								
Bellows Falls	6	.....	5,200	No	No	1	No	5,000
Bennington	4	.....	3,500	No	No	Yes	No	8,000
Montpelier	2	Hand pumping engine.	3,000	No	No	No	No	8,000
St. Albans	2	.....	4,200	No	...	3	...	6,700

For foot notes, see page 496.

TABLE NO. 3.—HAND-DRAWN APPARATUS AND MISCELLANEOUS DATA (Continued)

Name of City.	Hand reels	Other hand drawn apparatus.	Length of hose on hand, feet.	Are wires in business district under ground?	Are oxygen helmets used?	Are cellar pipes used?	Are search lights used?	Popu- lation.
VIRGINIA:								
Alexandria	2		4,500	No	No	No	No	16,000
Bedford	2		1,200	..	..	..	..	2,800
Buena Vista	..		500	..	..	..	..	3,000
Charlottesville	..		5,800	..	No	..	..	7,500
Clifton Forge	..		2,300	No	No	No	No	6,700
Covington	..		3,200	No	No	No	No	5,000
Farmville	..	H. & L.	3,000	No	Yes	No	No	3,500
Fredericksburg	..	H. & L.	2,500	No	No	No	No	6,000
Harrisonburg	..		1,800	No	No	No	No	5,000
Marion	4	Chemical	2,000	No	No	No	No	3,500
Newport News	..		7,500	No	No	No	No	25,000
Petersburg	..		5,800	No	Yes	Yes	Yes	25,000
Portsmouth	..		6,500	No	No	No	No	33,000
Richmond	..		30,000	Mostly	Yes	Yes	Yes	127,000
Roanoke	..		12,000	Yes	No	Yes	Yes	35,000
Salem	3		3,000	No	No	No	No	5,000
Staunton	1		1,700	No	No	No	No	10,500
Suffolk	1		..	No	No	No	No	10,000
Wytheville	2	Wagon	1,300	No	No	No	No	4,000
WASHINGTON:								
Bellingham	4		..	..	..	..	..	30,000
Dayton	..	8 hose carts	3,200	No	No	No	No	3,000
Everett	..		..	No	No	Yes	No	24,814
Hoguliam	..		6,300	No	No	..	..	10,000
North Yorkima	..		..	..	..	..	..	18,000
Olympia	3	Village truck	5,000	..	No	No	Yes	7,500
Port Townsend	4		3,700	No	No	Yes	No	4,500
Snohomish	3		2,000	No	No	No	Yes	4,000
Tacoma	7		35,900	No	Yes	Yes	Yes	87,000
Vancouver	..		5,000	No	No	Yes	No	12,000
Walla Walla	..		6,200	Partly	Yes	Yes	..	20,000
WEST VIRGINIA:								
Charleston	..		10,000	No	Yes	Yes	Yes	30,000
Keyser	3	Ladder truck	2,000	..	..	..	..	6,000
Martinsburg	..		1,500	No	..	..	Yes	12,000
Morgantown	5		4,500	No	No	No	No	15,000
Wheeling	1	Chemical	18,000	No	Yes	3	No	45,000
WISCONSIN:								
Algoma	3	H. & L.	2,000	No	..	..	..	2,500
Ashland	..		6,550	No	No	No	No	12,000
Beaver Dam	2		2,850	No	No	2	No	..
Burlington	..		3,500	No	..	..	..	..
Chippewa Falls	1		4,000	No	No	No	No	3,300
Columbus	3		1,800	No	..	Yes	No	9,000
De ePre	..		2,500	No	..	No	No	2,400
Eau Claire	..		7,800	Telephone	No	No	No	5,000
Fond du Lac	..		7,800	No	No	Yes	Yes	18,310
Jefferson	2		2,000	No	No	Yes	No	19,000
Kenosha	..		6,000	No	No	No	No	3,000
Manitwoc	..		6,000	No	Yes	No	No	25,000
Menomonie	..		2,000	No	No	Yes	Yes	15,000
Merrill	1		5,000	..	No	No	No	5,500
Milwaukee	..		73,000	Yes	..	2	..	9,000
Oconomoc	3	Bucket cart	3,000	No	Yes	Yes	Yes	400,000
Racine	..		13,000	No	No	No	No	3,000
Rhineland	..		4,700	No	..	..	..	41,000
Stanley	..	3 hose carts, H. & L.	3,500	No	No	No	No	6,700
Stevens Point	..		5,400	No	No	No	No	3,000
Stoughton	2	H. & L.	2,200	No	..	Yes	..	10,000
Superior	3	Chemical	13,000	Partly	No	No	No	5,000
Tomah	..		9,000	No	Yes	Yes	Yes	40,384
Two Rivers	..	3 hose carts	3,000	..	No	No	No	3,428
Wanpun	..		2,000	No	..	..	..	5,500
Wausau	..		18,500	Yes	No	Yes	No	3,500

a Will be brought up to 5,000 ft. within a few months.

b Increases to 25,000 in winter.

c All wires are in alleys.

d In residential district also.

e Will soon.

f Will be

DANGER OF BONFIRES.

Inspector of the Bureau of Combustibles and Fire Risks of Newark, N. J., C. Albert Gasser, has called the atten-



TRIAL FOR SPEED AT ABILENE.

tion of the citizens to the danger of bonfires.

"I know the temptation there is," said he, "to burn up the rubbish that has been gathered together, but I'm sure that when the people realize the need for the city regulation these temptations will be overcome. The smoke from bonfires has frequently resulted in the sounding of an alarm, and there is no telling what accident or fatality may befall firemen and apparatus while answering such an alarm."

Election Day is coming and with it a harvest of bonfires.

GOOD TIME IN ABILENE.

The accompanying illustration shows a fire team at Abilene, Tex., making a record which shows that for short distances the motor apparatus has little advantage over the horse-drawn, so far as speed is concerned. This team, with four men, made the hitch, ran 1,000 feet to a hydrant, turned a corner, laid 200 feet of hose and threw water in 1 minute 2½ seconds.

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for. Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

OCTOBER 3, 1912.

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Fire Statistics in This Number.

A year ago Municipal Journal published statistics from about 700 cities and towns giving numerous data concerning their fire departments. This information was greatly appreciated in numerous instances, and copies of the issue containing the data have been in demand throughout the year. Various uses were made of this table, perhaps the most important being that it enabled the department in any one city to compare its equipment with those in other cities; and in case it was found to be below the average, it offered convincing arguments which the chief of the department could use in appealing to his city council for more or more modern apparatus.

In view of this, it seems worth while to give somewhat similar information again this year, and we publish in this issue a table giving data from about 825 cities and towns. A number of the items of informa-

tion given last year it was not thought desirable to repeat, as the conditions probably had changed but little. In the matter of apparatus, however, and especially of the adoption of automobile apparatus, there is a continuous change going on, and we have confined our investigation largely to this subject. Last year we estimated that the figures given for auto apparatus covered at least 80 per cent. of the cities which possessed such apparatus, and this year, with the increased number of cities, it seems probable that our table contains 85 to 90 per cent. of the motor fire apparatus in use in the country. Last year showed figures of such apparatus as follows: 58 pumping engines, 15 plain hose wagons, 217 combination hose and chemical, 24 chemical, 8 ladder trucks and 92 chiefs' autos. This year our table gives the following totals: 177 pumping engines, 68 plain hose wagons, 419 combination hose and chemical wagons, 28 chemical engines, 52 ladder trucks and 277 chiefs' automobiles. With full allowance for the fact that this year's figures are probably 6 or 8 per cent. more complete than those of last year it is seen that there has been a very great increase in the use of auto apparatus.

Advantages of Motor Apparatus.

In connection with furnishing the data given in the tables, a number of fire chiefs indicated subjects concerning which they desired information, and among these was the question of the adaptability, and especially the economy, of automobile apparatus for small cities and towns. On this point it may be stated generally that the greatest advantage of such apparatus from the point of view of expense appears to be in its use by medium-sized cities, say from 20,000 to 100,000 population. In these cities horses are generally kept solely for fire department purposes, and may require to be fed and lodged and receive the necessary attendance for from five to thirty days for every hour that they are in service drawing fire apparatus; while the only equivalent continuous expense of the automobile apparatus is interest on first cost and a small amount of depreciation while not in use. The depreciation while in use would probably be somewhat greater than that of horse-drawn apparatus because of the machinery used in propelling the apparatus, but this is offset by the sinking fund required to renew horses from time to time. In the large city the horses are used much more frequently, and in many cases do not stand idle any more than is really beneficial for their health, so that in these cases the comparison between up-keep of horses and that of motor machinery is much less advantageous to the latter. In the small city and town the advantage of the auto apparatus is greater than in either of the other cases where horses are kept constantly on hand exclusively for fire department purposes; but where arrangement is made for obtaining private horses for infrequent fires, or where the horses are also used by other departments, such as street cleaning, paving, etc., the matter of up-keep of horses is largely eliminated, and the question becomes chiefly one of comparison between the interest and depreciation charges on the two classes of apparatus.

The above is based purely upon considerations of cost, but this is by no means the whole story. The efficiency of the apparatus is even more important, and here it seems to us that the advantage lies with the automobile apparatus for all sizes of cities. It is generally recognized that motor apparatus can reach a fire more quickly than can horse-drawn, especially where the distances to travel are great. In the large cities a fire entails greater loss than in the small, and seconds are even more important. In the small cities and

towns where the horses are not constantly on hand ready for service, the time saved by motor apparatus in getting started is very much greater and this consideration is a most important one.

Other considerations which to a large extent would come under the head of financial advantages are the fact that, owing to the greater speed and the tirelessness of the engines, motor apparatus can cover a larger territory from a single station than can horsedrawn, and therefore the substitution of the former for the latter may permit the reduction of stations by 25 to 50 per cent. Also the use of motor apparatus permits the omission of horse stalls and thus the reduction of size of fire department buildings, or the housing of more apparatus in an existing building, and this also makes for economy.

There are, of course, objections to counterbalance certain of these advantages, among the chief of these being engine and tire troubles. A sick horse can be temporarily replaced, or spare horses may be kept by the department for this purpose; but a sick engine means the temporary disabling of the entire apparatus. It may be said, however, that manufacturers of motor fire apparatus have lately gone into the subject much more thoroughly and scientifically than was the case two or three years ago, strength and durability are more carefully considered by them and such troubles are infrequent with the best class of apparatus, such as is now turned out by a number of manufacturers.

CAUSES OF FIRES IN TWO CITIES.

It is an excellent practice followed by a considerable percentage of the more progressive cities, both large and small, to keep a record of the causes of fires. One of the advantages is that it shows to the fire warden, and other officials interested in the question, where it is desirable to concentrate their energies, what class of buildings seem to present the most serious fire risk, what ordinances are necessary, etc.

Merely to illustrate the detail in which these records are kept, and also to indicate some of the differences between large and small cities in the causes of fires, we present herewith a table showing such data for two cities. One is Chicago, with a population of 2,300,000, the other a Mississippi city with a population of 10,000. In each case the percentage of all fires is given rather than the actual number, as this permits a comparison between the two. A number of classifications are employed by the Chicago department which are not given in this table because of the small number of fires which would come under them.

In glancing over this table, one of the most noticeable differences is the part which chimneys and inflammable roofs play in the small southern city as compared with the large northern one. In Greenville 14.6 per cent. of all fires were attributed to defective flues, and 9.4 per cent. to chimney fires, while in Chicago these two causes were responsible for but 7.5 per cent. of all fires. Again, the percentage attributed to sparks from chimneys and elsewhere setting fire to buildings was about eight times as much in Greenville as in Chicago. On the other hand, fires the cause of which was unknown were 50 per cent. more numerous, relatively, in Chicago than in Greenville.

Several local conditions appear from an inspection of the table. For instance, we find about 3 per cent. of the fires in Chicago are prairie fires, indicating both the nature of the country in which the city lies and the considerable amount of unoccupied territory which is embraced within the city limits. In that city also the largest single cause of fires was the burning of rubbish and bonfires. In view of this, it would seem incumbent

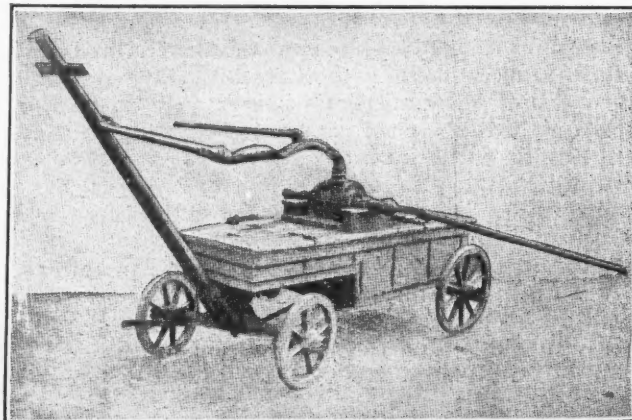
upon the city authorities to prevent fires of this kind by ordinances stringently enforced.

PERCENTAGE OF TOTAL NUMBER DUE TO EACH OF SEVERAL CAUSES.

	Chicago, Ill.	Greenville, Miss.
Ashes and hot coals	1.5	...
Bonfires, burning rubbish	12.0	...
Candles and torches, carelessness with....	1.0	...
Children, playing with fire and otherwise..	2.0	3.1
Chimney fires	6.2	9.4
Christmas trees	0.2	...
Cigars and pipes	1.5	...
Deceptive flues	1.3	14.6
Dryrooms, smoke houses and ovens overheated	1.0	...
Electric wires and lights.....	3.0	1.0
Engines and boilers, stationery.....	0.4	...
Explosions and ignition, alcohol, benzine, naphtha, gasoline, kerosene	3.6	...
Explosions and ignition, chemicals.....	0.3	...
Explosions, dust.....	0.1	...
Explosions and ignition, gas.....	0.5	...
Lamps and lanterns, explosions and accidents	1.1	4.2
Oil and gasoline stoves, explosions and accidents	1.3	4.2
Explosions of water barks	0.1	...
Fireworks	0.6	...
Fumigating	0.1	...
Heating furnaces	1.3	...
Gas jets	1.6	...
Leaking gas pipes	0.8	...
Ignition of grease, oil and meats.....	1.0	...
Ignition of tar, rosin and wax	0.7	...
Incendiarism, known	0.4	...
Incendiarism, supposed	1.6	...
Lightning	0.5	...
Matches	6.8	...
Open fire places and grates.....	0.3	2.1
Prairie fires	2.9	...
Sparks from chimneys, locomotives and river craft	4.7	37.4
Spontaneous combustion	1.6	...
Steam pipes	0.5	...
Stoves and ranges	2.5	4.2
Stove pipes	0.5	...
Salamanders	0.2	...
Thawing water and gas pipes.....	0.8	...
Rekindlings	0.2	...
Miscellaneous	1.7	...
Unknown	31.6	19.8
Total number of fires during 1911.....	8,682	96
Population	2,300,000	10,000

AN OLD HAND FIRE ENGINE.

The Fire Department of Beaver, Pa., still retains as a treasured relic what it believes to be the oldest fire engine in the state of Pennsylvania and the first one possessed by that department. This pump was made by the American Hydraulic Company of Philadelphia, but the officials of the department have been unable to learn just when it was made or anything further concerning the manufacturers. If any of our readers can furnish them with information on these points it would be highly appreciated.



OLD ENGINE OF BEAVER, PA., FIRE DEPARTMENT.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance.

ROADS AND PAVEMENTS

Vidalia Builds Concrete Walks.

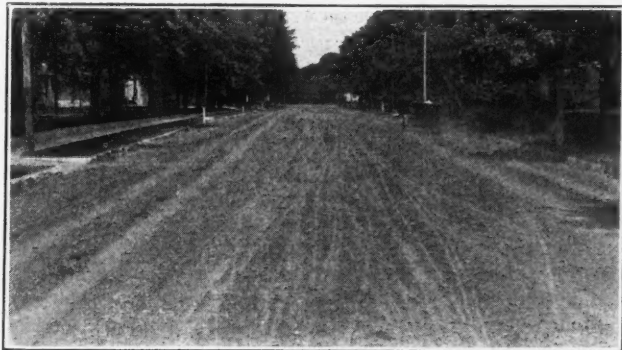
Vidalia, La.—Several hundred yards of concrete sidewalks are being laid. George H. Ruscher, of Natchez, has finished his contract with the town, having put down walks in the southern part of town, giving Vidalia double walks to the first railroad crossing of the St. Louis, Iron Mountain and Southern Railway.

Begins County Road Work.

Scranton, Pa.—Work on the county road has been begun by the MacDonald Construction company, twenty-five men starting on the job of putting on the topping above the Olyphant Corners in Blakely northward to the Mid-Valley Hospital. Other gangs are to be put at work between Dickson City and the Olyphant Corners. The MacDonald Company has agreed to have the work completed in Taylor, Dickson and Blakely by November. No work has been done on the road since the Harrigan contract was forfeited early in August.

Street Improvement in Carthage.

Carthage, Mo.—Illustrations are shown, indicating the details of the recent improvement of the roadway on a portion of Grand avenue. The methods followed as well as the result attained are well illustrated. Property owners on a portion of Grand avenue raised a fund at the rate of 25 cents per front foot. This money was turned over to J. D. Clarkson, president of the 366 Day Road Club to be expended. After hauling in dirt and raising the grade of the street several inches so as to make a



Courtesy Carthage Evening Press.

ROAD AFTER COVERING CRUSHED ROCK WITH SOIL.

good crown to the roadway a central strip of the roadway 18 feet wide was covered with crushed rock. This crushed rock was harrowed and rolled and then covered with dirt and rolled again, making a good surface for immediate use. It may be that in the near future a light coat of oil will be given this roadway, so as to keep down the dust and keep it packed.



Courtesy Carthage Evening Press.

ROCK CRUSHING MACHINERY IN CARTHAGE, MO.

Road from New York to 'Frisco.

Indianapolis, Ind.—A macadam roadway to extend from New York to San Francisco, a distance of 3,340 miles and to cost \$25,000,000 was proposed at a banquet of 300 Indiana automobile manufacturers and dealers, who subscribed \$300,000 to start the campaign in this state. The plan is to furnish material, at a cost of about \$12,000,000, free to the counties through which the road will pass, the counties to pay only the cost of construction. The route is to be selected by a committee to be chosen by an organization of automobile manufacturers and the road is to be constructed under the supervision of government engineers.

Street Paved With Local Brick.

Leavenworth, Kan.—The paving of Cherokee street from Broadway to Grand avenue, which was started early in the summer has been completed and will be opened for travel in a few days. The street is paved with Leavenworth brick and the contract was let to a Leavenworth man, O. C. Chapin. The street presents a fine appearance and the work no doubt will meet the approval of the city engineer when the final inspection is made by that department. The completion of this work will take some of the heavy traffic from Sherman avenue, as the grade up the avenue is somewhat steeper than Cherokee street.

Driveways Without Equal.

Washington, D. C.—Work is going on rapidly on the construction of the new driveway along the water sides of the section of Potomac Park to the eastward of the steam railroad tracks, and it is expected that a part of it will be used before the coming winter. Already about a quarter mile of the roadway on the south or Virginia channel side of the park has been graded and practically completed, and the cleaning up of the ground preparatory to the grading of the new roadway has also been completed along the south side of the park and around on the east front—the Washington channel side—for quite a distance. The entire driveway will be completed and ready for use early in the coming spring, and when completed no city in the country will have as long or as pretty driveways along the water's edge as has Washington. In the course of the next year the entire section of the park east of the railroad tracks will be improved and thrown open for the use of the public.

City Now Owns Free Bridge.

St. Louis, Mo.—St. Louisans may now say for the first time since the conception of a free highway across the Mississippi River that part of the incomplete structure known as the Municipal Bridge is the property of the municipality. The span proper passed into possession of the city on the payment of \$141,000 to the American Bridge Company, the balance due, which was being held back until the completion of the painting contract. The city is owner of all parts of the bridge which have been erected except the western approach construction. That work is still in the hands of the contractors and will not be finished for several months.

City Will Build Its Own Streets.

Louisville, Ky.—When the Board of Public Works issued orders to City Engineer David R. Lyman, authorizing the construction of Garden street, from Chestnut street to Baxter avenue with vitrified block, work on which is to begin in the next few days, the board fired the opening gun at the high-bid breastworks of the street contractors. Garden street is to be built by the city and not by contract. City Engineer Lyman has submitted estimates to the board members proving that street can be constructed at approximately \$1.75 a square yard, whereas bids from the contractors on the job ranged from \$1.85 up-

ward. The board decided upon this course of action rather than order a new letting in the hope of getting better offers from the street contractors. It is the intention of the board to authorize additional block paving in the near future by the engineers' department to impress upon the street contractors that they will be given no brick paving until they lower their bids. In the last few weeks the Board of Public Works has rejected bids on ten pieces of brick paving upon which bids ranged from five to fifteen cents a square yard higher than streets of a similar nature have been built for in the past three years. The law forbids the city doing any original construction (paid for by the property owners and collected by the contractors), but until the price comes down or owners of property living on the streets where improvements are contemplated demand the paving at the contractors' high prices, no work will be given to contractors, the city undertaking the reconstruction work and the original construction work being held in abeyance.

Street Improvements Being Made at Athens.

Athens, Tenn.—Almost every important street in Athens is being ploughed, blasted and scraped in order to improve the ease of traveling. Macadam streets and concrete paving are being laid, which will add beauty to the city as well as luxury for business and pleasure vehicles. The work is not expected to be completed for several weeks.

Clemmonsville Road Progressing Nicely.

Winston-Salem, N. C.—County Engineer Spoon says that almost ten miles of the Clemmonsville road has been graded and is ready for a finishing coat of sand-clay and rock. Arrangements have been made for placing the rock at the disposal of the road builders, and the work of distributing it will proceed. He says that the work is progressing nicely and that where hills and hollows were once is now as fine surface as is found on any of the county's roads.

Cave Under Busy Street.

Cincinnati, O.—A startling discovery was made one morning recently by workmen constructing a huge viaduct here, when they found a cave under the car tracks at the eastern approach of the viaduct, and over which more than 150,000 people pass daily. The hole measures 16 feet deep, 20 feet long and 12 feet wide. Cars of six lines have passed over the hole daily, supported only by the concrete and asphalt paving of the street and the track construction. The danger has existed for a long time, but how long nobody knows. The cavity will be filled with rock.

SEWERAGE AND SANITATION

Bronx Valley Sewer Ready for Operation.

Port Chester, N. Y.—Present indications point to the fact that the Bronx Valley sewer will be ready for use in all municipalities through which it courses on October 10th—less than a month away. By that time one line of pipe will have been laid by the Phoenix Construction Company, that is extending the outlet from the shore to a point beyond the bulkhead line, and the Sewer Commission will take action at once looking to the use of the sewer when pipe is laid. There will be two lines of pipe.

Plan to Stop Pollution of Brook.

Plainfield, N. J.—The notice received from the State Board of Health two weeks ago calling for a discontinuance of the pollution of Greenbrook, from the sewer beds, stirred the common councils of this city, North Plainfield and Dunellen to action and as a result, plans prepared by George W. Fuller, the Sanitary Engineer jointly engaged, have been ordered filed with the State health authorities for approval. The plans as prepared call for the location of the proposed sewage disposal plant on the Darling farm, well removed from the outskirts of Dunellen. The passage of the resolution was not accomplished without opposition, however, as Fred Endress and P. J. Reville, the two Democratic members of the City Council, objected to the route as planned to reach the site. The adoption of the plans by the Dunellen and North Plainfield councils was unanimous.

WATER SUPPLY

Cleburne Water Mains Laid.

Cleburne, Tex.—The contract for laying new water mains in the city has been completed. Twenty-seven thousand feet of new mains have been laid, 20,000 feet of which is six-inch and 7,000 four-inch, with 31 fire hydrants, 20 six-inch valves and 9 four-inch valves. The new deep well has been completed and a fine supply of water obtained at 1,200 feet.

Hazleton's Water is Pure.

Hazleton, Pa.—That the water furnished to Hazleton consumers by the Wyoming Valley Supply Co. and the Diamond Water Co. is pure, was demonstrated by a report from W. H. Dean, of Wilkes-Barre, an analytical and consulting chemist, who has given it a thorough test. Health Officer Bonner took samples of water from the hydrants of six homes located in different parts of the city, and sent them to Mr. Dean for analysis. Officer Bonner received word that none of the samples contained colon bacillus, and stated that the water is pure. Hazleton people need have no fear of a typhoid epidemic as far as its drinking water is concerned.

Demand Price on Town Water Plant.

Maryville, Me.—Maryville's board of public works has made a demand of C. F. Street, owner of the Maryville City Water Co., for a final price on the Maryville water plant, and failing to get a satisfactory price will institute proceedings to issue the \$100,000 worth of bonds voted by the city for the installation of a plant to be owned by the city.

New Water Supply.

New Pine Creek, Ore.—When the pressure of the new water system at New Pine Creek was tested it was found that there was sufficient force to throw the water over the highest building in town, using a two-inch hose. The supply comes directly from a well in Pine Creek Canyon, one mile from town. This will be reinforced in case of fire by a supply directly from the mill pond located one-half mile east of town, which will enter a four-inch pipe at that point.

Test White Rock Pumps.

Dallas, Tex.—As a test of the qualities of the \$75,000 pump at White Rock, Water Commissioner Nelms has had it in full operation for three or four days. It has been pumping into the city mains an average of 11,500,000 gallons per day for that time, and Mr. Nelms said he is thoroughly satisfied with the demonstration. The city still owes \$7,500 on the pump, and this is not to be paid until the officials are shown that it is all that it should be. During the time water has been pumped from White Rock the Turtle Creek station has been shut down. However, as soon as the demonstration of White Rock is completed pumping will be resumed at Turtle Creek and White Rock simply held as a reserve supply, there being no intention of pumping from it regularly at this time. Mr. Nelms says that there is about a 200-day supply for the city now in storage at White Rock, a total, he estimates, of 2,500,000,000.

Monmouth Ready to Turn On Water.

Monmouth, Ore.—Monmouth's new \$20,000 water system has been completed, with only a few small adjustments necessary to have it operating. The reservoir on Cupid's Knoll, with a capacity of 200,000 gallons, will be of sufficient size to supply water to the city for many years to come. Over four miles of mains are necessary to distribute the water in the city, and the City Council is now taking steps to furnish water meters. The Council has also ordered that another well be sunk in order that the city shall have a supply even in the driest seasons. The work of the contractor has been accepted, and the Council is discussing rates.

Water Uncontaminated.

Glasgow, Ky.—The citizens of Glasgow are rejoicing over a communication from the State health authorities to Dr. S. J. Smock, health officer of Barren county, saying that the water of the public well in the courthouse yard is pure and free from harmful bacteria. A sample of the water was sent the health authorities, who have just concluded the analysis with the above results.

Hornell Concerned About New Dam.

Hornell, N. Y.—Disquieting rumors have been in circulation for some time past regarding the inability of the new and great reservoir for the water works holding water, and these rumors, while having a certain amount of foundation, are evidently much exaggerated. The reservoir cost \$45,000. A splendid dam has been thrown across the valley, impounding the waters of the creek. It was hoped that the frequent rains of the past few weeks would have filled the great basin before this time, but it still lacks several feet of reaching the spillway, and below the dam a considerable stream still runs down the creek bed, indicating that the work of impounding the waters has been defective in some way.

Whether this is due to quicksand or to other elements of uncertainty in the inspection of the banks of the creek is not yet known. City Engineer Proctor says that there is nothing for him to report, that the reservoir is all right, and that the work required to make the dam water tight was inconsiderable and that it would eventually turn out to be all right in every way. The dam, he said, was a good one. That the foundation went down to the rock and was sunk therein ten feet. That while there were some small leaks, the water was rising and would eventually be all right and the new reservoir be a benefit to the public. Mayor Nelson in an interview states that in his opinion the supposed leak in the new dam is nothing but the regular outlet in the bottom of the dam left to act as a feeder to the lower reservoir.

STREET LIGHTING AND POWER

White Way for San Angelo.

San Angelo, Tex.—San Angelo now ranks among the leading cities of Texas in the lighting of its streets. The street lamps used are known as the magnetite arc and incandescent lights. The arc lights are of 2,000-candlepower and the incandescents are sixty-candlepower. There are thirty arcs and seventy-five incandescents. Business men are planning for the establishment of a great white way which will eclipse anything of a similar nature in any city in the Southwest of three times the size. Citizens here are taking a great interest in improving the streets and a great civic spirit has been aroused.

New Electric Lights for Capitol Grounds.

Washington, D. C.—New 100-candlepower incandescent electric lights will have been installed around the Capitol, the Senate and the House office buildings, while Delaware avenue, between Union station plaza and the Capitol grounds, will have been transformed into a great white way when Congress meets in December. The District of Columbia electrical department has completed plans for providing improved lighting around the federal buildings and on Delaware avenue, which is the principal approach to the Capitol, and work on the installation of the posts probably will be commenced next month. Altogether about 170 of the new lights will be installed. The lighting arrangement decided on for Delaware avenue is the same as that installed on Pennsylvania avenue and 7th street. Posts will be set on each side of the thoroughfare at distances of seventy feet. The posts have been ordered, and it is expected that the lights will be turned on by not later than December 1. Utilizing the remainder of last year's appropriation for new lights, the electrical department is now preparing to furnish better illumination on Vermont avenue between Thomas and Iowa circles and on Rhode Island avenue from Iowa circle to Connecticut avenue. Eighteen posts for the 100-candlepower lamps already have been installed on Vermont avenue, within

the limits named. The new lamps on Rhode Island avenue, of which there will be thirty-four, will be placed in operation probably next week. Improvements planned for Delaware avenue and the streets surrounding the Capitol and the Senate and House office buildings will be the first made out of the appropriation carried in the current District of Columbia appropriation act, which authorizes the expenditure of \$12,000 for new posts. When this work has been completed the next section of the city to come in for better illumination will in all probability be East Capitol street and around Lincoln Park. Here it is planned to provide 117 of the new lamps. In the spring the department will take up the work of replacing the arc lights on Columbia road, from Connecticut avenue to Mount Pleasant street and Park road with the 100-candlepower type.

Brilliant Lights for Tombs.

New York, N. Y.—In order to prevent any more escapes from the Tombs a battery of powerful electric lights is being installed about the courtyard and exterior of the prison. The lights are equipped with reflectors, so placed that every nook and cranny of the yard and walls is as light as day.

Improvements in Street Lighting.

Rochester, N. Y.—A very attractive appearance was presented by the Central Avenue bridge, when the new lamps were lighted for the first time. The lamps are 14 feet and 6 inches above the pavement and are of the same type used in East avenue. A new type of standard approved by City Engineer Fischer takes the place of the standard used in the avenue. The new concrete poles on Alexander street between East avenue and the canal are nearly ready for use and some of them have been lighted.

New Lighting Plant at Edgerton.

Edgerton, Wis.—At the adjourned meeting of the common council a supplement to the business men's petition for new system of street lighting was presented provided for eighteen five-light 60-watt mazda ornamental street light posts, all to be maintained by the Electric Light company for \$1,060 per year. This makes an advance in the cost of lighting the streets about \$750. About thirty taxpayers were present, most of them favoring the proposition, and the pressure was so great that when a vote on the proposition was taken the six aldermen voted to accept the offer and the city attorney was instructed to prepare a contract for the new lighting system. Work of installing the new system was commenced at once.

Winnipeg's Power Plant Pays.

Winnipeg, Man.—Winnipeg's municipally owned hydro-electric light and power plant, completed last year, is now firmly established on a paying basis. The fact that it has been the means of reducing the cost of domestic lighting 66 per cent. of the rate previously charged by a private corporation has gained for it the general patronage of the people, and even at this low rate the plant is now paying the cost of operation and maintenance. Applications for the installation of civic light and power are coming in fast, and the department reports a substantial increase in contracts for power, which is supplied at cost to manufacturers. The new civic plant has undoubtedly proved a strong factor in inducing industries to locate in Winnipeg.

Ornamental Lights in City Hall Park.

Burlington, Vt.—F. E. Rodliff, who has the contract to install the new electric light system in City Hall park, has begun work. Men are digging holes at different points for the ornamental poles of which there will be 26 around the park. Each pole will contain three large lights, two of which will burn until midnight each night and the centre light, a larger one, will burn all night. The wire will run in underground conduits so that none will be above ground. The distributing point will be under the grand stand, which will also be included in the system. Mr. Rodliff stated that the lights would be in use by three weeks in all probability. Besides these lamps the streets about the Park will be further lighted by lamps of the same character, to be placed on the sidewalks by merchants in the vicinity.

FIRE AND POLICE

Salt Water Service Estimated at \$100,000.

Santa Monica, Cal.—An estimate of \$100,000 has been made on the cost of the proposed salt water fire service proposed for Santa Monica. The district, outlined by the committee delegated to work with the city engineer, includes the section of the city bounded by Ocean avenue, north to Oregon avenue, east on Oregon to Fourth street, and for South Santa Monica extending east to Main street. City Engineer Phelps has been instructed to prepare an estimate of the cost which is to be met by assessment against the property benefited or by a general bond issue.

Ample Fire Protection for Great Fair.

San Francisco, Calif.—No fire hazard at the Panama-Pacific international exposition. No disaster like the holocaust which razed the beautiful group of buildings at the Belgian exposition. No risk when foreign exhibitors send their priceless treasures to the San Francisco fair. No greater care has been taken by the exposition authorities than in the matter of adequate fire protection. If the exposition management had not been wise enough to take time by the forelock in this regard, the foreign powers would have promptly forced the question upon it, for there is throughout Europe a wholesome dread of a big blaze wiping out exhibits which, burned up, could never be replaced. Besides a thoroughly equipped modern fire department constantly on guard at Harbor View from the very inception of general building operations, there will be installed in every building an overhead sprinkling system. Working drawings for the installation of the fire protection system have been started under the direction of Engineer Johnson of the National Board of Fire Underwriters. The contract plans, together with the specifications, will be finished during the present month.

Six Months' Loss Over Two Millions.

Des Moines, Ia.—More than \$600,000 worth of uninsured property in Iowa was destroyed by fire during the first six months of the year. This is only one-fourth of the total fire loss for the same period, the total being \$2,360,088. Between January 1, 1912, and July 1, 1912, there were 1,356 fires reported to State Fire Marshal Ole O. Roe, and over \$10,000,000 worth of property in the state more or less damaged. Out of this number, insurance was carried on all, though in many cases not nearly enough to cover the loss, except in 132 fires where there was no insurance at all.

State to Observe Fire Prevention Day.

Chicago, Ill.—Illinois will observe Fire Prevention day on Wednesday, Oct. 9, the forty-first anniversary of the great Chicago conflagration. The day has been set aside by a special proclamation issued by Gov. Deneen. In the proclamation the governor calls attention to the heavy annual property loss and life toll caused by fires and issues an appeal for a combined effort of citizens to take steps to prevent fires. The attention of the mayors and chiefs of fire departments throughout the state is called to the occasion of the anniversary in a letter sent out by F. R. Morgaridge, acting state fire marshal. The governors of many other states have signified an intention of setting aside a fire prevention day. A similar observance was held last year, the Chicago Association of Commerce having charge of the local demonstration. The same organization will be in charge of the observance next month. Various meetings will be held and addresses will be made by firemen at the schools.

Police Band is Latest Project.

Spokane, Wash.—The Spokane Police Band will be the name of the latest musical organization, if plans now being discussed by several of Spokane's enthusiastic policemen mature. A pamphlet from the Portland police department telling of the success of the Rose City's police

band and a photograph of the musical squad has set the officers to thinking. Although the matter had been talked on previous occasions no suggestion had been made that action be taken. City Detective Dugger, one of the most interested in the new movement, is an expert snare drummer and has had considerable band experience. With him is Patrolman Wardell, a clarinet player; Patrolman McLeod, a performer on various band and stringed instruments; Detective Roy Fordyce, a bass drummer, and Greyhound Driver Fred Goddard, a cornet player and formerly a bugler in the United States navy. Several of the new members of the police department are credited with musical ability and Dugger believes that the organization of a brass band will not be difficult.

Appoints Woman as Fire Prevention Inspector.

New York, N. Y.—Appointed to the fire department by Commissioner Johnson with the rank of inspector, Miss Sarah Christopher will establish fire drills among the 100,000 girls in the cloak and suit factories of the city and teach methods of fire prevention. Commissioner Johnson selected a woman for the position because he believes she can work more effectively among women factory employes than a man. Particular effort also will be made by Miss Christopher to impress upon male employes the necessity of guarding against dropping lighted cigars and cigarettes on floors, carelessness which has led to many disastrous factory fires.

New Uniforms for Denver Police.

Denver, Colo.—By a regulation adopted by the fire and police board, patrolmen hereafter will wear uniforms which will be what their name indicates—uniform in color, style, fit and cost. The color will be deep blue; the style will be undress military, and cost the same as formerly. The present helmet must give way to a wide-brimmed black fedora with gold braid trimmings and an ornamental shield in front. Fashion notes of the department indicate the traffic squad, numbering sixteen members, will wear a khaki uniform of olive drab color.

Illuminated Fire Station Map.

Chicago, Ill.—When a big fire occurs in any section of a large city, all the fire apparatus in that section, and often from adjacent sections, are called into service, and frequently this causes considerable difficulty in distributing the remaining companies and apparatus to the best advantage. In handling such situations in Chicago, the fire-alarm headquarters in the city hall is provided with a map of the city on which each fire house is designated by a small electric-light bulb, operated by a switchboard. These bulbs are illuminated during the time the apparatus of each fire station is in its house, but as soon as the apparatus leaves its house, a plug bearing the number of the station in question is removed from the switchboard and the bulb designating this station on the map becomes dark. By means of this system, a glance at the map suffices to show the unprotected territory, and the fire apparatus not in actual use are distributed accordingly. This is one of the first maps of this type in America. They have been used for some time in Germany. Milwaukee has a fire map of a somewhat similar type.

Policewoman to Travel.

Los Angeles, Cal.—Arrayed in a natty uniform, which she herself designed and which is of trim military smartness, combined with fashionable straight lines of the hour, Mrs. Alice Stebbins Wells, the first woman to have been appointed a police officer in Los Angeles, left Sept. 16, on a six months' trip of inspection. Mrs. Wells will visit cities all over the country, speak before conferences, conventions, clubs and smaller organizations in the interests of having woman police officers appointed in every city. At Baltimore, Nov. 18, she will address a mass meeting, at which will be present, among others, Cardinal Gibbons, the governor of Maryland and the mayor of Baltimore. Mrs. Wells will attend the National Suffrage Association's annual meeting in Philadelphia, Nov. 20-26.

MOTOR VEHICLES

Dedicate New Fire Station.

Watertown, Mass.—With the dedication of the new fire station in Mt. Auburn street, Watertown's recently purchased auto fire truck went into commission. Fire chiefs and town officials from neighboring municipalities attended the ceremonies incident to the dedication, and inspected the new station and motor apparatus.

One Accident Follows Another.

San Francisco, Cal.—William Sullivan, driver of Fire Patrol No. 4, was injured internally at the corner of Seventeenth and Mission streets when in endeavoring to avoid a collision with an automobile, he swerved his truck so suddenly out of the way that it tipped over. The crew of six firemen was also badly jarred, but none save Sullivan was hurt seriously. The automobile patrol was sent for, and this, too, met with an accident in colliding with a motorcycle. The rider of the motorcycle was not hurt.

Fire Department In a Puzzle.

Council Bluffs, Ia.—A complication arose in the fire department recently when Assistant Chief Frank Hitchcock received word that the new auto combination chemical and hose wagon had arrived at the local Wabash freight station and the railroad company wanted instructions as to its disposal. The truck was from the Webb Fire Apparatus Company of St. Louis and was ordered by the city council about two months ago. The mayor has never signed the contract and there is some question as to what the city will do. Whether they are to accept the truck and issue warrants for it or stand upon the mayor's refusal to sign the contract as legal warrant for the refusal to accept, is a question of some moment with the members of the fire department, who are anxious to see it in actual use with the Central Hose Company. It is possible that the council will wait until the mayor returns from the east before taking action either way. The truck will probably remain on the car until action is taken.

Auto Equipment Reduces Insurance Rate.

San Antonio, Texas.—In order to reduce the insurance key rate, San Antonio will purchase two hook and ladder trucks and another fire engine. This will result in saving the taxpayers thousands of dollars by securing a substantial reduction in the rate. The apparatus has been badly needed, as there is only one hook and ladder truck in the city and it is of the aerial type and too heavy to be pulled into the residence districts. The new equipment has been ordered and will reach the city within the next thirty days.

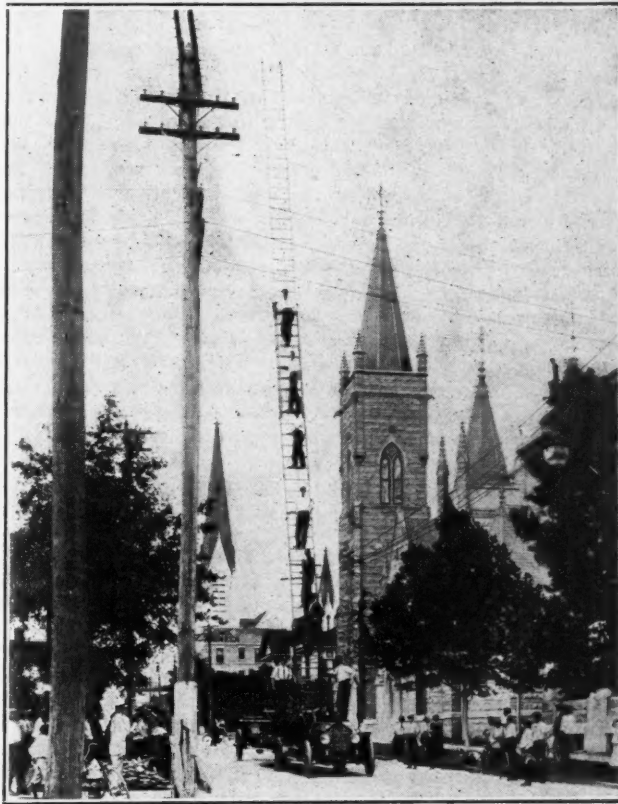
Fire Apparatus for Norridgewock.

Norridgewock, Me.—A new engine hall has just been completed, and a new fire engine recently purchased. Many of the people for a long time have realized that the town needed more adequate fire protection, and have tried to get it, but some have retarded progress. Recently, however, the people turned out to a town meeting and voted to buy a Howe fire engine. Another town meeting

was held, and it was voted to appropriate a certain sum of money for the building of a new engine hall. This new building is a two-story structure and is built of wood. The walls are covered with asbestos and the foundation is concrete. The upper story can be used for various purposes, but will be used by the firemen. It was built under the direction of Contractor Everett. A fire company has been organized in the town.

Latest Addition to Central Fire Station.

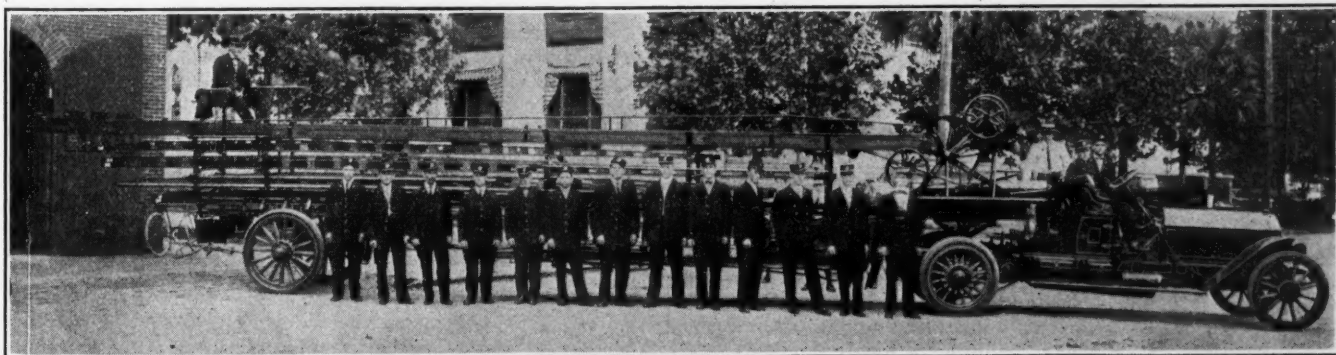
Jacksonville, Fla.—With the addition of the 60-horse auto driven aerial truck the Central fire station's entire equipment is now motor driven. The truck was furnished by the American La France Company and its length is so great that an extra freight car had to be coupled with the one on which the machine was shipped to Jacksonville in order to protect its over-jutting end from being



Courtesy Jacksonville Times-Union.

AERIAL TRUCK IN OPERATION.

damaged in transit. The accompanying picture shows the truck, with the crew in charge and the operation of the aerial ladders. Besides the main ladder, which sweeps into position in a few seconds eighty feet high when the lever is thrown, the truck carries 182 feet of additional hand ladders. The main ladder can be placed into many positions and angles by making adjustments after it has been raised.



Courtesy Florida Times-Union.

JACKSONVILLE'S AUTO DRIVEN AERIAL TRUCK.

Test Hartford's New Motor Apparatus.

Hartford, Conn.—The first of the three Pope-Hartford fire automobiles ordered by the city a number of months ago, was delivered to Chief Loomis at fire headquarters, Temple and Market streets, by representatives of the Pope Manufacturing Company. The second is nearly completed at the Pope factory and will soon be turned over to the city. A short time after the new apparatus had been received, it was given a thorough demonstration by the Pope company, as to its speed, chemical capacity, hose carrying capacity and other essential details. The demonstration was carried on in the presence of Chief Loomis, the fire commissioners, and other officials of the department. The new auto is a combination hose and chemical wagon, having non-pneumatic rubber tires and an estimated speed of about thirty miles an hour. It is the first of a new pattern designed by the Pope company, being slightly different in design from the auto wagons now in use by Squad A and engine company No. 1, both of which are products of the Pope factory. The new wagon has a chemical capacity of thirty-five gallons, and a hose-carrying capacity of one thousand feet. It represents all that is modern in automobile fire apparatus building and possesses equipment of the latest and most approved pattern. One of the new wagons will be placed at the house of engine company No. 5, on Sigourney street, where it will afford greatly improved fire protection to the entire hill district. Another will be placed at the modern house of engine company No. 3, on Windsor avenue, and the Knox fire automobile there will be transferred to engine company 3, displacing the horse-drawn apparatus of the latter company. The third will be placed, according to present plans, with chemical company No. 10, on Bond street, thereby greatly bettering fire protection facilities in the southern part of Hartford.

Motor Apparatus Saved Ocean Park.

Los Angeles, Cal.—Motor-driven fire apparatus alone prevented devastation of Ocean Park by the recent great fire. This is the opinion of Fire Chief Eley, who regards the fire as one of the most thorough practical tests auto-vehicles have undergone. "If we had had to depend on animal-drawn apparatus," he said, "we would have been up against it—I hesitate to predict where the fire would have been headed off. The auto-pumping engine will work at a hydrant until the fire at that point is under control and then it may be whisked to another and brought into service immediately—which means only a few seconds. They worked for over six hours this way at Ocean Park without any breakdown. Horses could not have stood up under this work; they could not have drawn the heavy vehicles from Los Angeles to the fire except in relays."

The engines of which the chief spoke are Robinson machines.

The auto-engine did stunts that a steamer could not possibly do. It pumped from sewers, manholes, cisterns or any place where water was found. One of the spectacular stunts was the aid the auto apparatus gave in handling hose lines. The nozzle of a line was fastened under the rear of the chassis and the fast machine hauled it in a few seconds where men would require minutes. In several cases where the nozzles were not shut off the heavy line, weighted with water was dragged a distance of 1,000 feet or more. Once when it was desired to "cut across lots" with a heavy line to the rear of a building the auto "bucked" the curb, went over it and dragged the heavy line across the sands.

Several new records were made by the Los Angeles equipment. Chief Eley went from the Hill street engine house to the fire, a distance of more than 16 miles in 18½ minutes. No officer tried to stop him. This is not unusual speed for him but it is the longest distance run he has made and it displays the added risk of life and limb that comes to firemen from the improved equipment. Engine Company No. 26, with auto equipment, located at Washington and Arlington, and Hose Company No. 5, located at Vernon and Normandie, were sent to the fire. The auto-en-

gine made its 15-mile journey in 26 minutes and stopped for water for the radiator. Its trip was accurately timed. The auto-hose wagon, having further to go and a different route, made the trip in 30 minutes. The time given means from the second the alarm was received until the apparatus was on the scene. The auto-engine weighs 4½ tons and is combined with a hose wagon. The hose wagon No. 5 carried 1,200 feet of hose (800 is the limit for animal-drawn), a 60-gallon chemical tank, and weighs 3½ tons. At the same time Engine Companies No. 23 and No. 4 were ordered to the fire on traction cars. They occupied two and one-half hours in the journey, which was made without any unnecessary delay.

Santa Monica has a Garford engine which performed equally efficient work at Ocean Park's fire but its best test, according to Harry Lord, of the Lord Motor Company, which handles it, was in competition with the other Santa Monica engine, which is animal-drawn. "The auto-engine is on the south side of the city and the horse-drawn on the north side," said Lord. "The auto was four miles from a fire and the horse-drawn two and a half. They started on the same alarm. The auto passed the horses a mile from the fire and was at work in 7½ minutes. This was upgrade all the way, which told on the animals but did not on the machine." "No better demonstration of speed of auto fire equipment has ever been made," said F. S. Hirsh, of the Gorham Company, which handles Seagrave apparatus, "than the impromptu one by the exhibitors at the fire chiefs' convention. Seven vehicles, all built for fire speed, made the trip around the block bounded by Hill, Second, Broadway and Third streets in 30 seconds, flat, turning four sharp corners and making a down and up-hill journey. Horses could not get in the harness in 30 seconds. An aerial truck made the same trip in one minute and within that time had its ladder up. Every vehicle encountered congested traffic conditions. This demonstration was made for the chiefs attending the convention and was, in my judgment, complete."

"If Los Angeles wants an automobile fire department without entirely new equipment," said Mr. Canavan, of the Vance-Canavan Company, which has the agency for the Knox fire apparatus (a pioneer complete line), "it can utilize the Martin tractor to great advantage, and may be attached to the front of a hose wagon, truck or engine in place of horses and bring extreme speed and also the economy attaching to auto-equipment. This tractor is being used extensively in the east and is saving cities enormous sums for changing equipment. Its use also in commercial lines where there is already a large investment in vehicles is now general. It is the real gasoline-horse."

Motor Hook and Ladder Truck in Collision.

Dallas, Tex.—A member of the Central Fire Station and a citizen were seriously hurt one day last week when the big automobile hook and ladder truck of the Central station gyrated down Elm street in unmanageable condition, while making a run in response to an alarm from Griffin street. The truck was responding to a fire alarm from Griffin street and was going north on Akard when it began to skid as it struck the Elm street crossing. L. M. Long, the driver, reported to Chief Meyers that he had been forced by an approaching street car to veer off the dry pavement to the wet surface and that in attempting to turn from the wet pavement back to the dry the car skidded and became unmanageable. Two pieces of motor equipment preceded the truck, and the street, thereby, was moderately well cleared for the passage of other apparatus. The truck swayed and swerved from curb to curb, until it skidded itself completely around and began running back east on Elm. In the turn an unknown man, who was standing in the street between the curb and car tracks, was struck back of the head by one of the projecting ladders and felled to the pavement. The truck then dashed into a horse and buggy breaking the shafts, and so loosening the harness attachments as to permit the horse to leap upon the sidewalk. Swerving out into the street again, and then skidding to the curb, twenty feet further on, the truck crashed into an automobile. Fireman Gus Schrieber was standing upon the running

board which received the brunt of the compact with the automobile, and his position was such that his body was crushed between the two. He fell to the street unconscious, and later, it was found, had severe internal injuries. Two front wheels of the automobile were broken, but the driver had just left the machine and no others were hurt. The hook and ladder truck was not damaged throughout this unruly performance. It was practically without a scratch when it was finally brought to a stop, and driven back to the station. It has been in use one month and one day.

Receives Three Combination Wagons in Year.

Hartford, Conn.—The third and last of the automobile combination fire wagons ordered several months ago by the fire commissioners, was delivered to Chief Loomis, and will be assigned to duty for the present with Chemical Company No. 10 on Bond street. Repairs are being made to the autos of Engine Company No. 1 and Squad A, and as soon as this apparatus is put into condition for service the automobile wagons will probably be sent to Engine Companies Nos. 2 and 5, while the auto now at No. 2's house will be sent to Engine Company No. 3.

Orders Twelve Ruabouts for Fire and Policemen.

Philadelphia, Pa.—The splendid work done by the 25 auto Model T delivery cars owned by John Wanamaker and the hundreds of other Ford cars which daily pass City Hall have given the Philadelphia police and fire department officials ample evidence of the speed and reliability of those celebrated little cars, and this has led the Department of Public Safety to purchase from Louis Block, of the Philadelphia Ford branch, 12 Ford torpedo runabouts. These cars have been put in service and are doing duty every day on the streets of the city. Of the 12 cars six are for use by the police department for the work of the highway inspectors in various parts of the city, and of the other six one is used by the Assistant Fire Marshal and the other five by the district chief engineers. The Ford car is handy in getting about the crowded streets of the congested business district and any man can learn to run it in a short time. It is speedy, and its endurance has been proved clearly. Another great advantage in the Ford car is its economy, being the least expensive of any car in the world.

Fire Fighting Feature at Trenton Fair.

Trenton, N. J.—Surpassing its novelty features of former years, the management of the Trenton Fair this year will give to its patrons a genuine fire-fighting battle. A house will be built in the space inside the half-mile track, which will be set on fire each day. The Webb Automobile Company will then demonstrate the most up-to-date methods of fire-fighting in the great American cities where the automobile has superseded the old style of horse-drawn machines. Every one understands the wild excitement caused by a fire. It will all be faithfully reproduced—the ringing of the gong after the alarm of fire has been sounded, the rush of the automobiles to the fire and the successful battle to extinguish the destructive flames.

New Equipment for Flying Squadron.

Philadelphia, Pa.—While Assistant Director Murphy, of the department of public safety, and Assistant Director Reed, of the department of public works, were examining two of the automobile hose wagons, which are to be used in the establishment of district flying squadrons, delivered to the city for approval, word was received from the electrical bureau that there was a fire at Twelfth and South streets. The two assistant directors, several firemen and a few newspapermen, boarded the machines and were whisked down Broad street and thence to Thirteenth and South streets, where it was learned that the fire was out. The machines are a combination hose and chemical autotruck, of 48 horsepower, and are capable of making fifty miles an hour. They are equipped with light ladders and are designed to cope with a fire in its early stages. The promptness with which they can respond to a fire, it is believed, will enable the crews to put out a blaze before it gets headway, and will often make it unnecessary for the heavy engines to respond.

One of the machines will be located at Manayunk and the other at Holmesburg. There will be three other similar machines. Jacob Boyd & Brother, of Twenty-fifth and Wharton streets, are the contractors. On account of the ambiguous wording of the ordinance making the appropriation out of which these and several other automobiles for the fire department were to be purchased, an amendment will be asked by Director Porter before the contractor is paid.

Neighboring Departments Are Friendly.

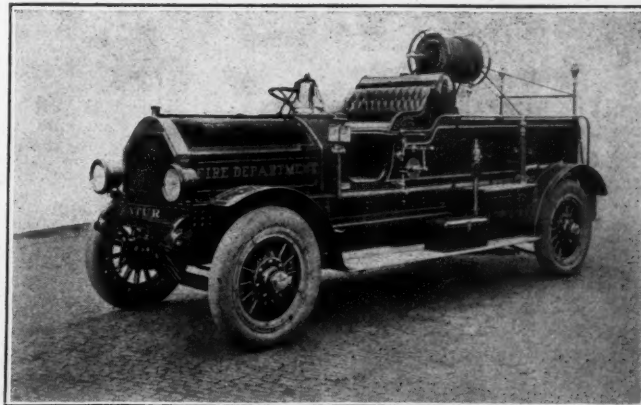
Lockport, N. Y.—To show the friendly feeling that exists between the Buffalo fire department and the local department the new Victor combination wagon No. 5 purchased by the former, was sent down to Lockport so that Lockport firemen could see the latest in auto fire apparatus. C. M. Miller, superintendent of the Victor Motor Truck Co., had the wheel and the fire department and John Boland, Charles Acher and P. J. Manning, of the Buffalo fire department, accompanied him. A demonstration was conducted on East avenue and Assistant Chiefs Harry Few and Andrew Cameron, former Chief Dr. W. E. Jenney, Police Officer Turner and others treated to a ride on the truck while going at a 50-mile an hour speed.

Motor Engine Received With Ceremony.

Westmont, N. J.—Westmont Fire Company No. 1 and citizens held a ceremony in honor of the housing of a new combination chemical hook and ladder truck one, afternoon last week. Two companies from Audubon and companies from Haddonfield, Chew's Landing and Collingswood participated. The truck, bought by citizens, and all paid for, was turned over to the people by Lawyer Ralph N. Kellam, of Merchantville, in a stirring address. William McDevitt accepted it in behalf of the people and gave a history of the company. The apparatus, platform and firehouse were nicely decorated with flags, bunting and flowers. On the lawn, opposite the firehouse, tables were spread with an abundance of food, and in the evening a dance was given in the firehouse. A handsome horn was presented by the Oaklyn Company to the Westmont firemen, voted the most popular volunteer company at a fair recently given by the Oaklyn Company. Joseph Carey, president, made the acceptance speech. Chief Edward Martin had entire charge of the day's program.

Motor Chemical is Good Hill Climber.

Niagara Falls, N. Y.—The motor-driven chemical and hose cart has been tested by Mayor Keller and Fire Commissioner Crick, and more than met all requirements. The specifications called for a speed of 35 miles an hour, and the car showed 50 miles on the Lewiston road. Running at high speed, the car made the Lewiston mountain in two minutes and completed the trip from the downriver village to Main street and McKoon avenue in twelve minutes. It is expected that the car will be put in commission at fire headquarters early next week. Eventually, it will be placed at the Highland avenue house, now building.



MOTOR FURNISHED DECATUR, ILL., FIRE DEPARTMENT BY THE ATTERBURY MOTOR CAR COMPANY.

Wants Tests Made Public.

Los Angeles, Cal.—At the recent convention of the Pacific Coast Association of Fire Chiefs an interesting paper by Master Mechanic Birmingham, San Francisco, on "The Future of Motor Apparatus" was read. Mr. Birmingham urged that a standard for testing gasoline pumping engines should be adopted. Chief E. B. Raymond, Olympia, Wash., read a paper urging that when tests of automobile apparatus are made, the officials interested send to the fire journals detailed and careful account of such tests.

Will Test Efficiency of Chemical Engine.

Bayonne, N. J.—A visit to Philadelphia was made by Mayor Cronin and the Fire Committee a short time ago for the purpose of inspecting a new method of applying chemicals in the extinguishing of fires. As a result of this visit there will be a practical demonstration by the Boyd Auto Fire Engine Company of Philadelphia in Bayonne. The Boyd people will erect two buildings, each 12 by 16 feet, and divide them into rooms. The structures will be saturated with oil and set on fire. Mayor Cronin will be permitted to act as umpire and when in his judgment both buildings have burned long enough to allow the flames to get good headway, he will have at hand the best chemical fire extinguishing apparatus in the city's service to make a comparative test. He will choose the building that presents the least resistance to the efforts of the firemen, while the Boyd company's operatives will fight the more difficult fire. The Philadelphia concern assured Mayor Cronin that their chemical fire extinguishing apparatus will demonstrate its superiority over the best in use in the local fire department.

Plans a Historic Pageant.

Massillon, O.—Safety Director Shepley is making plans for an exhibition of the Massillon fire department, by epochs. It will be in the form of either a mock run, or a parade. The date of the exhibition is not yet decided but it will take place soon after the new automobile apparatus reaches the city. According to a telegram received by Director Shepley, the automobile fire apparatus for the central department was to be shipped immediately from St. Louis. The Vigilant hand-engine now retired from service and resting on the lawn east of the central fire department, will be pressed into service to demonstrate the way our grandfathers used to fight fires, 59 years ago. The old hand engine will be manned by a crew of volunteers and if any of the old Vigilant uniforms can be unearthed they will probably be used in the demonstration. The first fire that the old hand engine extinguished broke out in 1853. More modern fire fighting methods will be demonstrated by the present horse-drawn apparatus, and, in contrast to the old Vigilant apparatus, the present equipment will show how our fathers and their children fought and are fighting fires. Fire fighting of the future in the city will be shown by the demonstration of the new automobile apparatus. This will be the climax of the exhibition, as planned by Director Shepley. The details of the exhibition have not yet been formulated, but will be completed by the time the automobile apparatus arrives in Massillon.

To Make Motor Distributors Available Throughout State.

Rochester, N. Y.—Supervisor Isaac Budlong, of Wheatland, Chairman of the Good Roads Committee of the Board of Supervisors, and County Superintendent McClintock spent a day in company with G. C. Mills, Superintendent of Repairs on state roads, in making some interesting tests of a new apparatus designed to put asphaltic oil onto highways, so as to lay the dust and bind together broken stone or gravel, so that it will stand the action of automobiles. The machine is owned and operated by the Standard Oil Company and is in charge of A. W. Rogers. It weighs, when loaded with 750 gallons of oil, about nine tons, puts the oil on the road in the form of a fine spray under pressure, so that one gallon will cover five square yards of surface, and is so smoothly laid and is so thin, it is claimed, that automobiles

will not pick it up even if no covering material is put over it. It is proposed to locate one of these machines in each district into which the state will be divided, so that when any city, county, town or state official or private individual wants a piece of road oiled to keep down dust, the machine will be sent out at once to do it, and the whole cost will be one and one-half cents per square yard, which amounts to only \$52.80 for a mile long and 9 feet wide. Two oilings during the season will hold down dust better than water. To show how the machine can be used over great distances it was run during the test fully 70 miles, and pieces of road were oiled in Caledonia, Mumford, Scottsville, Henrietta Station, West Henrietta, East Rush, and then was run over to East Mendon to oil the gravel road extending to the county line and forming a connecting link in the great route from Rochester to Canandaigua and the east.

GOVERNMENT AND FINANCE

Tower Adopts New Charter.

Tower, Minn.—The election held on the proposed new City Charter, resulted in its adoption by a vote of more than 3 to 1. The vote cast was: For, 99; against, 30; blanks, 5. The adoption of the charter will also clear up the matter of bonds for the new hydro-electric plant.

Guthrie Votes Capitol Site.

Guthrie, Ok.—By a vote of 1559 to 9 Guthrie has decided to transfer to the State, free title to the Guthrie Convention Hall and a fourteen-acre campus surrounding it for use for State Capitol purposes, in case the Capitol is voted to Guthrie permanently on November 5. The deed to the property will be issued immediately and placed in Governor Cruce's hands.

"Municipal Research" Commission Is Planned.

Chattanooga, Tenn.—At a special meeting of the City Commission, Mayor Thompson introduced a resolution providing for a Bureau of Municipal Research, and setting aside \$600 to maintain the organization. The resolution passed its first reading. Although the appointment of the members of the bureau is with the City Commissioners, the following organizations will be asked to designate one member each, the Pastors' Association, the Central Labor Union, the Chamber of Commerce, the Manufacturers' Association and the Woman's Christian Temperance Union.

Dayton Takes Advantage of Constitutional Amendment.

Dayton, O.—President Smith, of the Chamber of Commerce, will appoint a committee to go into the matter of drafting a form of government that is especially adapted to the needs of this city as contemplated by the Home Rule amendment that was adopted by the people of the State at the recent election.

STREET CLEANING AND REFUSE DISPOSAL

Investigates Garbage Disposal Systems.

Los Angeles, Cal.—Councilman F. J. Whiffen, after an absence of six weeks visiting eastern cities and studying their garbage disposal systems, has returned to Los Angeles and submitted to the City Council a report of his investigations. He was impressed with the advantages of reduction rather than destruction of garbage, because the former method brings financial returns from the products, obtained chemically. The drying system of reduction which Chicago has he prefers to the cooking system which Cleveland and Toledo are using. Either system may be installed, he says, without being more objectionable to a neighborhood than many other industries now operated in the business district of all large cities, in his opinion. Mr. Whiffen regards the city's present system of collection as the best and most practical in vogue anywhere.

Pledge Garbage Reform.

St. Louis, Mo.—Day collection of garbage began in St. Louis September 22. Two months ago night collections were inaugurated and the cool weather has made possible a return to the former plan. Receivers of the Great Western Chemical Corporation, which holds a six-year contract for the disposal of the garbage, following a conference with city officials have promised better service and assured the officials the debts of the corporation would not interfere with the fulfillment of its contract.

City Will Charge for Hauling Leaves.

Fort Dodge, Ia.—Councilman C. H. Smith, head of the Department of Streets and Public Improvements, in a signed interview, says that property owners who dump leaves raked from their property or other rubbish for hauling by the wagons of his department will be charged up with the cost of hauling. Heretofore a considerable number of the property owners have imposed upon the department, and hence upon other taxpayers, by securing the hauling of the rubbish free of charge.

Clean-Up Day at Gainesville.

Gainesville, Tex.—The city of Gainesville was cleaned from one end of the town to the other one day last week, under the supervision of the Mayor and several of the most prominent social and civic leaders. The entire street department, headed by the Street Commissioner, put in about ten hours' hard work during the day in leveling up the most prominent streets, and every idle man in the city was put to work collecting rubbish and cutting down weeds. Every street sprinkler that could be found, both the old ones that had been thrown aside, and the new ones, were going from daylight until late at night, sprinkling the streets, both in the business and residence parts of the city.

Committee Gives Lesson in Clean Streets.

Pittsfield, Mass.—When early risers appeared on the business streets of Pittsfield one morning recently, they found on the sidewalks in front of fifty business places the words: "Cleaned by the Board of Trade." This action was taken by the Civic Committee of the board, which requested merchants to clean their walks on Saturday nights in order that the city may present a good appearance to Sunday tourists.

Little notice was taken of the committee's request. Hence, the committee members themselves did the work. The sidewalks fronting Mayor K. B. Miller's property, the First Baptist Church, and the office of one of the newspapers which had been advocating the desired improvement were cleaned and branded among others. The street cleaners were President George H. Southerd, of the Board of Trade, a former New York banker; George H. Cooper, coal dealer; Joseph Ward Lewis, J. Arthur Baker, Ralph M. Dennett, attorneys, and Carl B. Lindhold, a civil engineer.

RAPID TRANSIT

Near-Side Car in Operation.

Chicago, Ill.—Chicago's "near-side" street cars, which have both entrance and exit at the front vestibule, are meeting with the unqualified approval of the patrons. The officials of the Chicago City Railway Company, which has installed the new type of car on South Side routes, are enthusiastic in their praise of the cars. A new Chicago ordinance requires all street cars to stop on the "near" side of all street crossings to take on and discharge passengers. With the new style cars the patrons who desire to take a street car walk to their position to wait for the car only a few feet from the sidewalk crossing point. They know the car will stop just short of the street intersection. In the new style cars the motorman and conductor both stand in the front vestibule of the car. The conductor, who gives the signal to start the car can see without any difficulty when all the passengers are

free of the car step and that it is safe to proceed. On the old-style cars where passengers got on the rear entrance and off the car at both front and rear the conductor had to wait until he could get a clear view of both front and rear steps before he could give the "go-ahead" signal to his motorman. It was not an unusual thing for the conductor to give the motorman "the bell" before the last passenger was clear of the front step and thus cause injury to some one who might be thrown to the pavement. Often a false start was made which resulted in injury to passengers who were thrown down by the sudden jolt when the car was stopped again. With the new cars such an accident is impossible if the traffic rules are followed by the car crew. After the last passenger is aboard the door is closed and the step is pulled up, making it impossible for any belated patron to get a foothold on the car.

Three-Cent Fare for Strap Hangers.

Atlantic City, N. J.—As the first step in the movement recently inaugurated to force the local electric lines to give better service, Mayor Riddle at a session of the City Commissioners introduced an ordinance fixing the fare for those who secure seats at 5 cents, with "strap hangers" at 3 cents. The ordinance was taken up on first reading, and, as there is little doubt of its ultimate passage, the trolley companies are expected to put up a hot fight.

Women Conductors.

Philadelphia, Pa.—The Philadelphia Rapid Transit Company is experimenting with women conductors on its new pay-as-you-enter cars. Two of the cashiers or ticket sellers from the Market street elevated were detailed to the job. Although no official of the corporation would say what the experiment indicated, the superintendent of the division where the girls were tried is reported to have been pleased. On the new cars the conductor is merely a cashier. He sits within a cage-like enclosure, receives the fare, makes change and records his receipts. Electric switches have relieved him of the necessity of aiding the motorman, and there is no adjusting of trolley poles because of the new device with which the cars are equipped. The company thinks it does not need men to do this work if the women prove efficient. The chief aim of the company is to do away with as many of the causes of labor difficulties as possible. By employing women to do half the work that was formerly done by men it is understood that the corporation has determined to rid itself of those who have taken sides in the agitation that has kept the labor situation unsettled. Some of the men on the division where the women were tested yesterday wore long faces last night. It is expected that the public will take kindly to the change. It has had little or no sympathy with the labor difficulties of the transit company, and they believe that the use of women will be beneficial. It is estimated that the company will save about one-third on the wages formerly paid to conductors.

Would Number Street Cars.

Pittsburg, Pa.—Councilman W. A. Hoeveler has devised a scheme that, according to his idea, will lessen the strain on the eyesight of the street car patrons of the city. "My plan is this," said Mr. Hoeveler. "I intend to confer with the officials of the Pittsburg Railways Company and perhaps introduce into Council a motion asking that the cars of the different routes be numbered in letters about fourteen inches high and illuminated at night. Everybody knows the difficulties that the street car patrons are confronted with when wishing to hail a car to take them to their destination. It is hard to tell at any distance to what line a car belongs that is speeding towards you. But with the lines numbered as I suggest anybody can see at a glance and at a long distance away whether or not it is his car. Even the grown persons that are unable to read are able to tell figures. I am of the opinion that the system would be a great improvement on the present method of things."

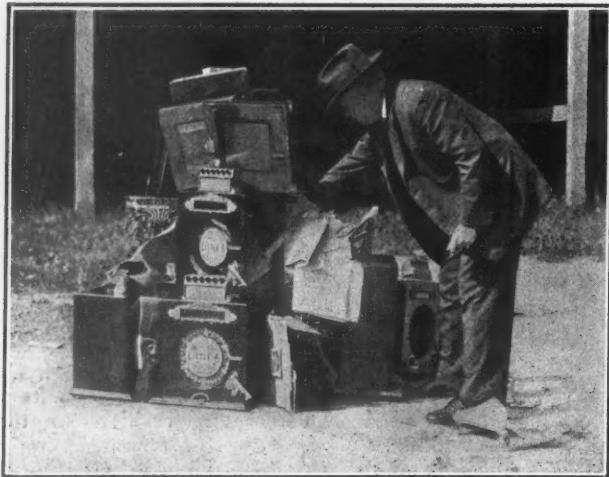
MISCELLANEOUS

Public Market for Bradford.

Bradford, Pa.—The city council has taken the first official step toward the establishment of a public market. Two ordinances were acted upon favorably. One provided for the bonding of the city in the sum of \$20,000 for the purchase of a site and the establishment of the market and the other provides for submitting the question to the people.

Novel Bonfire in Cranston.

Cranston, R. I.—The picture shows Chief of Police Kiernan applying a match to a pile of slot machines confiscated from saloons in Cranston several months ago. The slot machines were confiscated and condemned after



Courtesy Evening Tribune, Providence, R. I.
MAYOR BURNS SLOT MACHINES.

the police department had made a tour of several saloons where it had been learned that slot machines were placed. The machines were regarded as gambling implements in that they were played for money.

Chattanooga Will Have Vice Commission.

Chattanooga, Tenn.—From present indications the board of city commissioners will shortly appoint a vice commission to act in conjunction with the pastors' association, in an effort to improve moral conditions within the city proper as shown to be needed by the recent sensational disclosures made by two members of the latter body.

The new commission will probably consist of two members from the board of city commissioners, two members from the pastors' association, one member from the chamber of commerce, and one from the manufacturers' association.

Relation of Trolley Service to City Markets.

Philadelphia, Pa.—The Department of Public Works of Philadelphia has been investigating the cost of living and comes to the conclusion that city owned markets of themselves will afford no relief. The Director believes in municipal markets, but insists that they should be operated in relation to trolley service reaching forty miles into the country on all sides, and trolley terminals in different sections for the city as bases of supply for the retail stores. In addition the State Railroad Commission should have plenty powers to enforce such traffic compacts and rates as will reduce the present high cost of transportation.

Mayor Advocates City Orchestra.

Denver, Colo.—In place of the small band which was used to entertain the citizens of Denver in the Auditorium last winter, Mayor Arnold will have this season a 50-piece symphony orchestra under the leadership of Raffaello Cavallo. A motion-picture show of high class also will be included in the Sunday evening entertainments, and the mayor has suggested that 15-minute speeches be given by prominent men at the gathering. It is the mayor's plan

to have the winter Sunday night gatherings as highly educational as possible, and still be foreign from any approach to the "high-brow" so all the people may enjoy them to the utmost. It is believed the organization of the symphony orchestra under Cavallo will result in the formation of a municipal orchestra of likely dimensions. The cost of the symphony as now outlined will be \$500. The mayor has determined not to deprive the people of their free entertainment and has declared himself as being desirous of improving that entertainment. He was opposed to such performances as were given in the Auditorium last winter and believes that their conduct was too extravagant when the service was taken into consideration.

To Turn City Into Park.

Mishawaka, Ind.—The city of Mishawaka will within another year be the prettiest of its size in the state. Through the influence of the many wealthy women of the city all vacant lots will be turned into miniature parks studded with flower mounds. Experiments on several lots near the center of the city this summer proved the feasibility of the scheme. Much enthusiasm is being shown by the people of Mishawaka in the project.

Edict Against Games of Chance.

Kansas City, Mo.—Games of chance must be eliminated from the amusement parks of Kansas City. This is the edict of Virgil Conkling, county prosecutor, who created a sensation by issuing a statement charging that the "invisible government of the police department" was in collusion with the law violators, who were operating gambling devices. He charged that the combination was taking in \$600,000 a month. "Candy wheels," upon which chances are sold for boxes of bonbons, and "cane racks," where people are given an opportunity to throw a little ring over canes to which dollar bills are attached, are the devices at the parks aimed at by the prosecutor.

Longer Hours for Market.

Los Angeles, Cal.—Urging that the curb market to be established at the plaza be given a fair opportunity to prove its worth and to give the housewife a chance to patronize it, Mayor Alexander will send to the city council a message asking that the time during which the market is to be open be extended. The regulations placed by the council on hours of the market are considered by many to be prohibitive in that the market can remain open only until 9 o'clock. Many letters have been received by the mayor urging that the time be extended. The movement for longer hours for the market also is championed by City Prosecutor Eddie. It is expected Mr. Eddie will appear before the council in support of the message forwarded by the mayor.

Plans City Flower Beds.

Grand Junction, Colo.—Charles K. Holmburg, commissioner of health and civic beauty, announces he has completed plans for a municipal flower garden in Palmer park, one mile south of Grand Junction. Flowers free of cost will be furnished for decoration of graves of people too poor to buy them from hot houses. Arrangements have also been made for garden contests by children of the city. The child having the most beautiful flower bed at the end of the season will receive \$50 as a prize.

Improve Playgrounds.

Portsmouth, N. H.—Mayor Badger, Councilmen Herrick and Leary and Harry E. Boynton and William L. Conlon, the special committee appointed to carry out improvements to the South playgrounds, have already begun their work. The committee has \$10,000 to spend, half of which was a gift from Woodbury Langdon and the other half was appropriated by the city council. The proposed improvements call for the dredging out of the pond, so that it will be suitable for bathing and boating, the building of a half-mile cinder running path around the shores of the pond and the setting out of shade trees. Plans have been submitted by Civil Engineer Grover and the committee expects to complete the work before cold weather.

LEGAL NEWS

A Summary and Notes of Recent Decisions—
Rulings of Interest to Municipalities

Telephone Rates—Municipal Regulation.

City of Louisville, Appt., v. Cumberland Telephone & Telegraph Company.—The enforcement of a municipal ordinance fixing telephone rates should not be enjoined as confiscatory before giving such ordinance a trial to show its actual effect, where the evidence leaves the probable result very close to the dividing line between the yield of a fair return and confiscation.—32 S. C. R., 741.

Police Power—Pool Rooms.

J. L. Murphy, Plff. in Err., v. People of the State of California.—The police power of a State justifies a municipal ordinance prohibiting the keeping of billiard or pool tables for hire or public use, but permitting hotel keepers to maintain a billiard or pool room in which their regular and registered guests may play.—United States Supreme Court, 32 S. C. R., 697.

Indebtedness—Constitutional Law.

Bethea v. Town of Dillon et al.—A single amendment to Consti. limiting the indebtedness of municipalities by adding a proviso that the limitations imposed by the section and by article, limiting the indebtedness of political divisions extending over the same territory or portions thereof, shall not apply to any bonded indebtedness where the proceeds of the bonds are applied to the purchase and maintenance of waterworks plants and sewerage systems, is not violative of article, declaring that where two or more amendments shall be submitted at the same time they shall be so submitted that the electors shall vote for or against each of them separately, since the amendment refers to the single subject of the limitation of indebtedness of municipalities.—Supreme Court of South Carolina, 74 S. E. R. 983.

Public Improvements—Fraud.

Kaynor v. City of Cedar Falls et al.—A contractor was required by the city to give bond to observe the regulations adopted by the Council in doing the work and the directions of the City Engineer, among which was one that he would not construct a walk, unless through to the curb line. The engineer was forbidden from laying out the grades until the owners of corner lots agreed to construct and pay for the crosswalks, the cost of which the city was not authorized by statute to impose upon the corner or other lots. Held, that the attempt to assess the cost of crosswalks against corner lots amounted to a fraud, which was ground for enjoining the levy of the assessment.—Supreme Court of Iowa, 135 N. W. R., 564.

Indebtedness—Power to Create.

Mayor and Council of City of Macon vs. Bibb County.—Where a county, by written proposal, offers to receive, care for, and treat, at the county pesthouse, persons afflicted with smallpox who are residents of the city, upon the basis that all expenses connected with the operation of the county pesthouse shall be apportioned between the city and county according to the number of inmates coming from the city and county, and the city shall pay its share monthly, and that the arrangement is to be terminable on 30 days' notice by either party, which proposition is accepted by the city, and where the city in subsequent years, during the pendency of the arrangement, sends smallpox patients to the county pesthouse, which patients are cared for according to the terms named in the county's proposal, the city will not be relieved from the payment of its proportionate expense, on the ground that the arrangement of the city and county to combine the pesthouses is void, because, as it is contended, its effect is to create a debt extending beyond the current year, and to bind the successors in office of the city.—Supreme Court of Georgia, 75 S. E. R., 435.

Ordinances—Offenses.

Dismukes v. Town of Louisville.—An ordinance which adopts as the laws of the municipality Code 1906, relating to crimes, is void, because it undertakes to make all crimes, including felonies, committed within the municipality, municipal offenses, while section 3410 limits the power to misdemeanors only.—Supreme Court of Mississippi, 57 S. R., 547.

Street Pavements—Improvement Districts.

McCafferty et al. v. City of Omaha.—Before the Mayor and Council of a city of the metropolitan class are authorized to order the paving of a street in a district not entirely within 4,500 feet from the streets surrounding the City Hall grounds, there must be a petition of the property owners of the proposed district, and a street improvement district must be created by ordinance. Comp. St. 1911, 107. The improvement district so formed is the foundation of all further proceedings in that behalf, including the levying of taxes to pay for the improvement and the relieving of taxes for the improvement when a former levy has been set aside for irregularities.—Supreme Court of Nebraska, 135 V. W. R., 552.

Employee's Compensation—Waiver.

Kirk v. City of New York.—A city employé, having, to escape an authorized removal or suspension, necessary because of lack of funds, and to avoid the hazard of not being re-employed within the year during which he was permitted under the law to remain on the civil service list, voluntarily waived his pay for the rest of the year, is estopped to claim his agreement.—New York Supreme Court, 136 N. Y. S., 1061.

Public Improvements—Liens.

Coleman & Kraus v. Board of Education of City of New York et al.—Under Lien Law providing that, if the lien is for labor or materials furnished for a public improvement, it shall not continue longer than three months from the time of the filing of notice unless an action is commenced to foreclose such lien and notice of the pendency of such action filed, the lien of one who is made a party defendant to a foreclosure action brought within three months is protected by such action and notice of lis pendens filed by the plaintiff.—New York Supreme Court, 136 N. Y. S., 1054.

Ineffectual Dissolution—Actions.

Ringling v. City of Hempstead.—Under Const. Tex. and Rev. St. Tex. 1895, providing that the officers of municipal corporations shall hold their offices until the election and qualification of their successors, where a municipal corporation of the corporation's contracts.—United States Circuit statute and thereafter no further officers were elected, jurisdiction could be properly obtained by the corporation in an action against it by service on the vision for payment of the debts of a dissolved corporation, there could be no constitutional method of disincorporation, as the result of such an incomplete system would be to impair the obligations of the corporation's contracts.—United States Circuit Court of Appeals, 193 F. N., 596.

Delegation of Powers—Ordinance.

Bond vs. Mayor and City Council of Baltimore et al.—While a mayor and city council cannot make a broad and unrestricted delegation to a subordinate board of a power and discretion intrusted to them by the Legislature, an ordinance which authorized the commissioners of finance of the city of Baltimore, when money should be needed for work being done, to issue stock in the amount required to secure the money needed, such stock to bear interest at not exceeding 4 per cent., but did not specify the exact times, amounts, or rate of interest, was not invalid as an improper delegation of power, although Acts 1906, as amended in 1908, provides for such stock to be issued from time to time, and in such amounts as the mayor and city council shall by ordinance prescribe; such delegation of power to the commission by the ordinance being in harmony with the delegation of power made directly to them by a provision of such statute, which authorizes them to sell and issue stock at the best prices obtainable in their judgment.—Court of Appeals of Maryland, 34 A. R., 258.

NEWS OF THE SOCIETIES

Calendar of Meetings.

October 2-12.

FIRE EXPOSITION AND INTERNATIONAL CONFERENCE OF FIRE PREVENTION, PROTECTION AND EXTINGUISHMENT.—Madison Square Garden, New York City. A. D. V. Storey, Secretary, 1269 Broadway, New York, N. Y.

October 9-10.

LEAGUE OF KANSAS MUNICIPALITIES.—Annual Convention, Salina.—Mayor O. H. Stewart, President, Parsons, Kan.; Prof. R. R. Price, Secretary, Lawrence, Kan.

November 12-15.

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.

December 8-8.

AMERICAN ROAD BUILDERS' ASSOCIATION.—Ninth Annual Convention, Music Hall, Cincinnati, O.—E. L. Powers, Secretary, 150 Nassau street, New York City.

December 12-18.

NATIONAL ASSOCIATION OF CEMENT USERS.—Annual Convention, Pittsburgh, Pa.—E. L. Humphrey, President, Harrison Building, Philadelphia, Pa.

International Association of Fire Engineers.

The fortieth annual convention opened in the convention hall of the Albany Hotel, Denver, Colo., September 17. About eight hundred members and guests were in attendance. Mayor Arnold made the welcoming address, followed by Fire Commissioner Thomas F. McGrew. William H. Solter, Youngstown, O., president of the association, responded. At the afternoon session, a resolution indorsing fire prevention work and building inspection by members of the fire department was passed unanimously as a protest against the action taken in a number of large cities where the inspection work had been taken out of the hands of the fire department and special inspectors created. Chief Kenlon, of New York, and others from the large cities were active in supporting the resolution. Chief Knofflock, Mansfield, O., expressed the opinion of the members forcibly in citing the danger that might arise from the rubbish stored in the basements of drug stores. Chief Kenlon said that in the last year, with the inspection done outside of the fire department, the loss in Manhattan had increased enormously. Part of the blame he laid at the door of the architects who plan the big buildings. "It is surprising," he said, "how little the average architect knows about how to construct a building so as to prevent or minimize the danger of fire." He further suggested that the building laws of the nation should be standardized and that the fire chiefs were the proper persons to take up the task. The subject under discussion was "Fire Prevention and Building Inspection," but practically every chief deviated from the subject to criticize insurance men for insuring buildings for more than their value. The practice puts temptation to commit arson in the way of property owners.

A notable circumstance in connection with the memorial services that are always held, was the fact that not a

single chief had died during the past year either as a result of disease or accident.

Heated debates marked the discussion of a paper by J. F. Connery, New-castle, Pa., in which he described and commended the newly developed piece of motor apparatus, the triple combination hose wagon, chemical and pumping engine. Many of the chiefs present, notably those from the large cities, disagreed with the opinions expressed. It was the contention of Chief Kenlon of New York, Chief Humphreys of Pittsburgh and others that the combination of so much apparatus on one vehicle was bad, as it was cumbersome and unwieldy at fires. Chiefs from smaller cities contended that the triple combination was a success in that it materially reduced the number of men needed. It was stated that in the outlying residence districts, where it was hardly practicable to keep a large engine, the new apparatus filled a long felt want.

The spectacular feature of the meeting was a fire run Wednesday evening on Fourteenth street by nearly all the apparatus in the Denver fire department. At the head was Chief John F. Healy in his auto, followed by the motor apparatus, the ladder trucks and finally the steam engine. Following the run was an exhibition at the training tower. A smoker was held in the evening.

A business session was held Thursday evening at which motor-propelled pumping engines was the chief topic of discussion. Chief Kenlon of New York said horse-driven apparatus soon would be a thing of the past, but he favored steam engines as against gasoline pumping engines for effective work. Other questions discussed were the proper location of sprinkling tanks, the care of fire hydrants to prevent freezing and the direct connection with city water mains of sprinkler systems and standpipes.

New York City was chosen as the next meeting place at the final business session of the convention of the Association. Chief F. H. Magee of Dallas, Texas, was chosen president. Other officers elected are: First vice-president, Chief Thomas Haney of Jacksonville, Fla.; second vice-president, Hugo R. Delfs of Lansing, Mich., who was selected after an exciting contest; secretary, James McFall of Roanoke, Va., and treasurer, George Knofflock of Mansfield, Ohio. Both secretary and treasurer have held these offices for many years and both were elected by acclamation.

New Jersey State Firemen's Association.

Chief Wm. Black, of the Atlantic City Fire Department, was to-day re-elected president of the association at its annual meeting in Atlantic City, Sept. 12. The other officers elected were: Vice-president, Charles C. Burr, of

Burlington; secretary, Cornelius S. Mount, of Red Bank; treasurer, T. O. Done, of Plainfield, and trustees, Geo. W. Arnett and Fred E. Decker, of East Orange. The organization of a State Fire Prevention Association was advocated by C. Albert Gasser, Inspector of Combustibles and Fire Risks in Newark.

Massachusetts State Firemen's Association.

The entertainment committee of 15 members that has been appointed by the Massachusetts State Firemen's Association to provide for the entertainment of guests to the thirty-third annual convention, which will be held in Boston, October 9, 10 and 11, held a meeting in the private office of Commissioner Cole, Haverhill, September 13. The full committee, which includes Commissioner Cole, Chief Mullen, Supt. Samuel Abbott of the Protective Department, all of Boston; Chief Dennis W. Carey of Lawrence, Chief William E. Cade of Wakefield, Capt. J. E. Jones of Lawrence, D. Arthur Burt, secretary of the State Firemen's Association; Captain James C. McKissock of Lowell, Dist. Chief John O. Taber of Pittsburg street, Boston; Capt. Edward J. Shallow of Ladder 1, Boston; Lieut. John P. Lane of the Protective Department, Boston; Lieut. Charles S. Cosgrove, aide to Chief Mullen, Boston; Dist. Chief Henry A. Fox, Boston; Lieut. Fred F. Leary of Engines 26-35, Mason street, Boston, and James P. Maloney of fire headquarters, Boston, were present.

Chief Carey of Lawrence, the president of the association, will call the convention to order on Wednesday, October 9. During the convention there will be addresses on important subjects. When the convention adjourns on the first day there is a harbor trip planned, and on the same day the fleet of fireboats will give an exhibition off the Northern avenue piers. That evening there will be a theatre party for the women of the party. On the second and third days there will be automobile trips and luncheons and a drill by a picked squad in the yard at headquarters under the direction of Lieut. Charles A. Donahue, the department drillmaster. The committee met again on the following Wednesday when arrangements were completed.

Louisiana State Firemen's Association.

The seventh annual convention of the association was held at Plaquemine, La., August 30, 31 Sept. 1. The convention was called to order in the Knights of Columbus Hall, at 11:30 a. m., by President Heaney. The firemen were given the key of Plaquemine by Hon. Peter M. Wilbert, in behalf of Mayor D. L. Reville. Chief Philip Wilbert welcomed the firemen on behalf of the local Fire Department. Captain E. E. Fullerton, of Winnfield; A. S. Brown, of Opelousas; J. H. Sandrook, of New Orleans; Chief Charles A. Riviere, of Thibodaux, and

William Holmes, of Alexandria, responded to the address of welcome, after which came the roll call of committees and delegates. The annual reports of the Executive Committee and officers of the association were read. The report of the Legislative Committee brought out an interesting discussion in regard to the enactment of the 1 per cent. law for the benefit of fire departments in the State; the action of Hon. Eugene McGivney, ex-Insurance Commissioner and now attorney for the insurance interests, in questioning the action of the firemen appearing before the House Committee on Corporations of the Legislature, in stating that they were not representing the firemen of Louisiana; also the action of Hon. M. Clayton, of Vidalia, and Hon. Joseph Generelly, of Orleans, in helping to discourage the good work of the volunteer firemen by helping to defeat the firemen's bill, was condemned by the firemen. The Resolutions Committee was ordered to draw up resolutions condemning the business men, municipalities, Messrs. Clayton and Generelly, for working against the interests of the firemen. Every fireman was urged to go home and take an active interest in again bringing the bill before the General Assembly at its next session.

When the time came for the election of officers, President Heaney declined to accept nomination, having served two terms. He believed the honor should go to another section of the State. Chief J. R. Gibbs was then elected president unanimously; J. H. Hebert, of Plaquemine, vice-president; Assistant Chief J. A. Lacoste, of Lafayette, treasurer; William J. Kleinpeter, of Gretna, re-elected secretary; Chief Charles A. Riviere, Thibodaux, statistician; Chief Chris. O'Brien, Shreveport, delegate to International Fire Chiefs' Association Convention. There were two towns seeking the convention, Opelousas and Hammond. Chief Wolff withdrew in favor of Opelousas, but gave notice that the firemen of Hammond in the near future hope to have the honor of entertaining the firemen of Louisiana.

Pacific Coast Fire Chiefs' Association.

Over eighty chiefs were present at the twentieth annual convention, at Los Angeles, September 9-13. The opening meeting was held in Symphony Hall, where Mayor Alexander made the address of welcome. There was a business session in the afternoon and a theatre party in the evening. On Tuesday, following a business session, a sight-seeing trip was taken through the city. A trip was also made to Venice, where the salt water fire system was exhibited. On Wednesday a trip was made to Long Beach, where the party inspected the harbor in launches. Thursday the members visited Pasadena. On Friday there was an exhibition drill at the fire department tower.

At the business session a list of

thirty-six topics was discussed. A recommendation was passed urging better fire protection in schools, orphans' homes and other public buildings where children meet.

The following officers were elected: J. W. Shrewsbury, Long Beach, president; A. J. Eley, Los Angeles, vice-president; J. H. Carlisle, Vancouver, B. C., treasurer; H. Bringhurst, Seattle, Wash., secretary. Tacoma was selected as the convention city for the 1913 meeting.

Pennsylvania State Firemen's Association.

The thirty-third annual convention of the association was held at Lebanon, September 10-12. The following officers were elected: President, Chas. S. Salin, Ridley Park; vice-presidents, John R. Musser, Waynesboro; Frank D. Grim, Franklin; Howard A. Foster, Glenside; E. O. Hartman, Lebanon; recording secretary, W. W. Wunder, Reading; corresponding secretary, James A. Green, Carlisle, financial secretary, Irwin A. Hahn, Philadelphia; treasurer, A. L. Reichenbach, Allentown; chaplain, Rev. Seth Russell Downie, Bath. Chester was selected as the next place of meeting by a large vote over Allentown and McKeesport. I. H. Hahn, financial secretary, reported receipts from individual members to the amount of \$4,514; death claims paid, \$2,200; receipts from representatives, \$1,420; expenses, \$1,925.48; number of individual members in good standing, 2,123; non-beneficial, 139; representatives, 771; total members, 2,973, and number of deaths, 20.

Virginia State Firemen's Association.

The twenty-sixth annual convention of the Virginia State Firemen's Association opened at Roanoke, Va., Aug. 28, with delegations from every section of the State present. The day was given over to the business sessions and in the afternoon a memorial service was held. The Roanoke Fire Department gave a parade in the evening.

The following officers were elected: President, H. H. Harlow, Staunton; senior vice-president, M. C. Smith, Pocahtontas; secretary, J. H. Glenn, Harrisonburg; treasurer, T. J. Williams, Charlottesville; statistician, J. J. Holt, Covington; chaplain, Rev. C. H. Smith, Richmond. The convention voted to meet next year at Staunton, Va.

In the hose reel races, Luray won first prize in the State event, and incidentally hung up a new world's record for the test, making it in 27 seconds flat. The best time previously made was 27.1-5, made by Strasburg a few years ago.

American Association of Public Accountants.

The Eighth Annual Convention met at Chicago, September 17. Papers were read by Alexander Smith on "The Abuse of the Audit in Selling Securities," and George E. Fraser, Instructor of Accounting in the Univer-

sity of Wisconsin, on "Who Can Qualify for Governmental Accounting." The "Relations between Bankers and Accountants" was discussed by David R. Forgan, president of the National City Bank of Chicago, and Robert H. Montgomery spoke on "Federal Control of Corporations."

Illuminating Engineering Society.

The Sixth Annual Convention of the society was held at Niagara Falls, September 16 to 19, with about 200 delegates and visitors in attendance. Among the papers were the following: "A Symposium in High Pressure Gas Lighting," by F. W. Goodenough of London, Eng., for the Great Britain section; Oscar Klatte of Berlin, for the German section; and R. N. Zeek of Philadelphia, for the United States section; "The Deterioration of Gas Lamps and Mantles in Service," by R. F. Pierce of Gloucester, N. J.; "Steel Mill Lighting," by C. J. Mundo; "X Characteristics and Tests of Enclosed Arc Flame Carbons," by Allen T. Baldwin and R. B. Chillas of Cleveland; "The Lighting of Small Stores," by Clarence L. Law of the Edison Company of New York; "Photometry," by Dr. Herbert E. Ives, of Philadelphia; "Diffuse Reflection," by Dr. P. G. Nutting of Washington, D. C.; "Some Reflecting Properties of Painted Interior Walls," by Claude W. Jordon of Philadelphia; "A Study of Natural and Artificial Light Distribution," by M. Luckiesh of Cleveland; "The Engineering Principles of Indirect Lighting," by Thomas W. Rolph of Cleveland; "Tests for the Efficiency of the Eye Under Different Systems of Illumination and a Preliminary Study of the Causes of Discomfort," by Dr. C. E. Ferree of Bryn Mawr College; "Visual Acuity," by Dr. Percy W. Cobb, of Cleveland; "Color Values of Illuminated Surfaces," by Bassett Jones, Jr., of New York.

PERSONALS

Crampton, Bay City, Mich., has been appointed Chief of the Fire Department.

Simmons, John J., Dallas, Tex., has been appointed a member of the Park Board.

Meisner, H. W., Temple, Tex., has been appointed a member of the Municipal Water Commission, in place of Hon. W. O. Cox, resigned.

Davis, Carlton E., New York City, has been appointed head of the Philadelphia water works department in place of Fred C. Dunlap, resigned.

Adams, Alton D., Public Service Engineer, Worcester, Mass., has been employed by the City Council of Ypsilanti, Mich., to furnish specifications and estimate of cost for a Municipal gas plant.

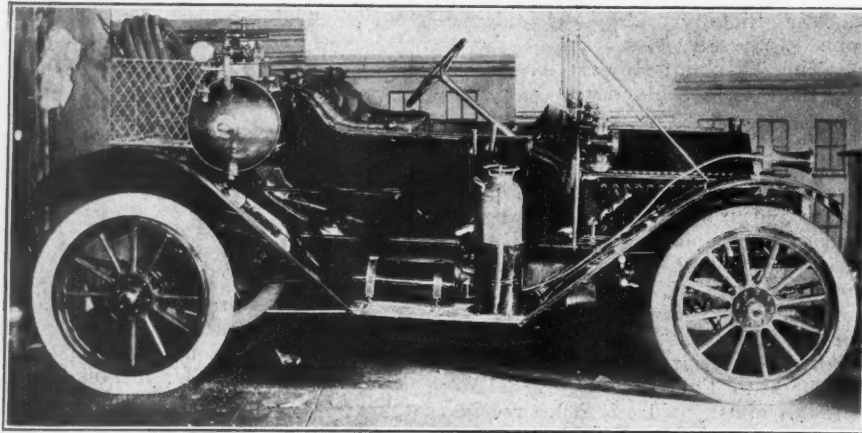
Ray, David H., Association American Soc. C. E., Chief Engineer of the Bureau of Buildings, New York City, has resigned to enter private practice as a consulting engineer, with offices at 27 West 33d St., New York City.

MOTOR FIRE APPARATUS

Classification According to Service Performed and Means of Accomplishing It with Some Notes on Methods of Propulsion.

The introduction of motor vehicles into fire departments has greatly complicated the classification of fire apparatus. A few years ago all vehicles were included in the following general classes: chief's buggies, chemical engines, combination chemical and hose wagons, hose wagons, pumping engines, ladder trucks and general service wagons. Now while the general classification remains the same in its chief points there are more than a score of types which are with difficulty

to be taken about, it is obvious that a four-seated vehicle is not necessary to carry one man to a fire, even if he has a driver. Runabouts are now usually selected. Small runabouts like the Ford are used for batallion chiefs in New York, where convenience in going through crowded streets is of the greatest importance. For chiefs of smaller cities who have to cover wider territory, high-power machines are desirable. The chief of the Topeka department has a fine car of this descrip-



CHIEF'S CAR WITH CHEMICAL TANK OF STANDARD CAPACITY.

included in a single description. There are, considering the method of propulsion, perhaps as many as a hundred kinds of vehicles which have important points of difference from each other. The actual difficulties of classification have been further complicated by lack of uniformity in nomenclature adopted by manufacturers in describing their apparatus. Thus an automobile carrying a chemical tank is called an engine and a combination apparatus carrying a couple of short ladders becomes a truck.

CHIEFS' CARS.

When automobiles were first purchased for the use of chiefs, ordinary touring cars were the usual choice. With more experience, however, there has seemed to be little justification for the use of a touring car to take a chief to a fire. However convenient a four-seated vehicle may be for a tour of inspection where civilian officials have

tion. It was made by the Overland Company, is 45-horse power and has a speed of fifty-five miles per hour. The machine weighs 3,000 pounds, has a wheel base of 118 inches and carries three hand extinguishers and a few tools. Another chief's car, bringing it almost into the class of chemical apparatus, is made by the Michaley Auto Company and carries a Holloway chemical tank of 35 gallons capacity and 100 feet of hose. The horse power of this car is 24, weight 2,650, wheel base, 102 inches.

SQUAD WAGONS.

Cars for carrying firemen to a fire, called squad wagons, were among the early developments of the motorization of fire departments. Springfield, Mass., and Detroit, Mich., were among the early cities to develop this type and still adhere to it. In most cities,

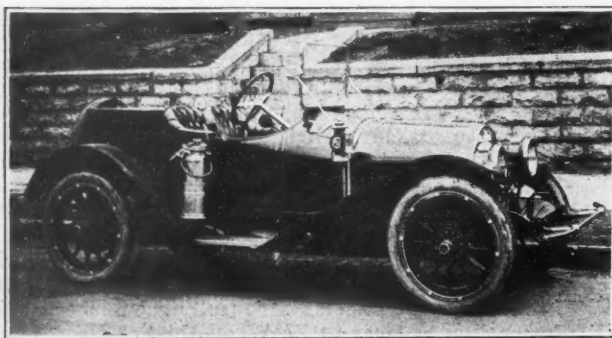
however, it has more recently been the custom to provide room for men on vehicles carrying some fire-fighting equipment, as chemical tanks, hose or ladders. However, the squad wagons have certain advantages in economy of men in fairly large fire departments, especially where there are training schools and the men in the squad wagon are able to take a hand at any piece of equipment. The illustration shows a Packard touring car used in Detroit, Mich. It is essentially a strong high-speed touring car with body adapted to carrying about eight men. For the past year or more these cars have been provided with 7-inch pneumatic tires. To keep as many as eight men available at all times requires a company composed of about seventeen men.

CHEMICAL ENGINES.

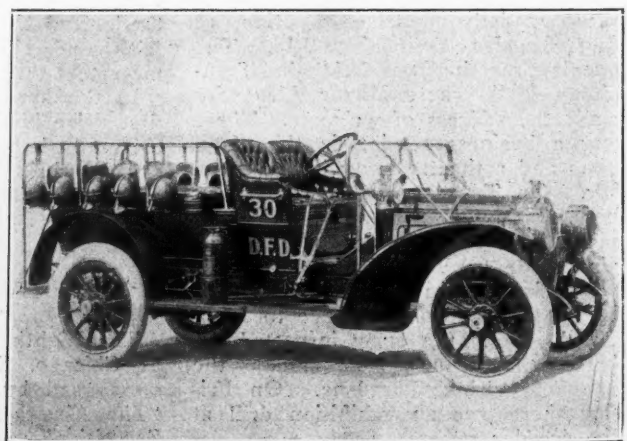
Motor-driven chemical engines carrying no other than chemical equipment are made by nearly all the large manufacturers. The demand for this type is not great. There seems to be little reason why a vehicle carrying chemical tanks should not carry men and hose as well. However, the type as designed by manufacturers generally consist of two soda tanks of about 70 gallons' capacity, placed rather low on the chains back of the driver, the cylinders being placed side by side, parallel with the median line of the vehicle. Old horse-drawn chemical engines of this style are easily converted into automobiles. The city of Paterson, N. J., has a connected chemical of this type at one of its central stations.

HOSE WAGONS.

The hose wagon is one of the oldest type of fire department vehicles. In old days it was often spoken of as the tender for the pumping engine, and in fact, was sometimes attached to it as a two-wheeled reel. Things have changed, however. Hose is now generally carried in combination with some other apparatus. However, the simple hose wagon still has a use in cities having high water pressure, so that pumping engines are seldom needed, and in the larger cities whether either with or without high pressure. In large cities where the pressure is high the hose wagon has come to be called



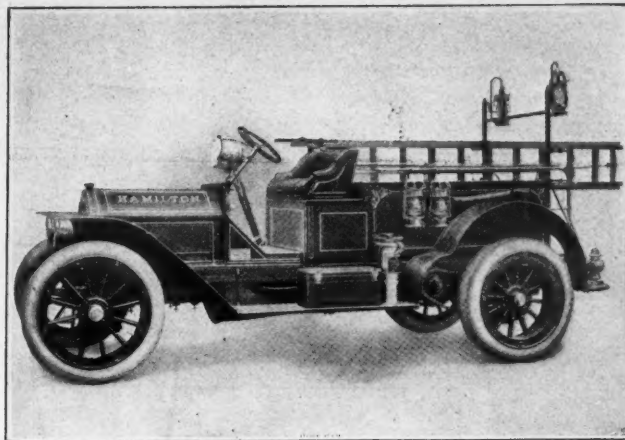
HIGH SPEED CHIEF'S CAR.



SQUAD WAGON USED IN DETROIT.



NEW YORK HOSE WAGON OF LARGE CAPACITY.



MODERATE SIZED HOSE WAGON.

a high-pressure wagon. In this case a turret nozzle is generally mounted on it. In cities like Paterson, N. J., Bridgeport, Conn., and others, where the pressure is not very high and motor-driven steam fire engines are used, the motor hose wagon becomes truly a tender for the pumping engine. The pumping engine goes to a hydrant, the hose wagon to the building in which the fire is. Hose is laid back towards the engine and time is saved as compared with the case where the engine carries its own hose. The illustration is of a hose wagon used in New York City to carry hose for a motor-driven pumping engine. The same wagon with a turret nozzle would be called a high-pressure wagon. The wagon shown is a Mack, others in similar service are made by the Webb Company. The simple hose wagon used for lighter service is generally a high-speed car with wagon body having capacity for 1,200 feet of $2\frac{1}{2}$ -inch hose. Such a car is in use in Hamilton, O., made by the La France Company, but in this case two small ladders are carried.

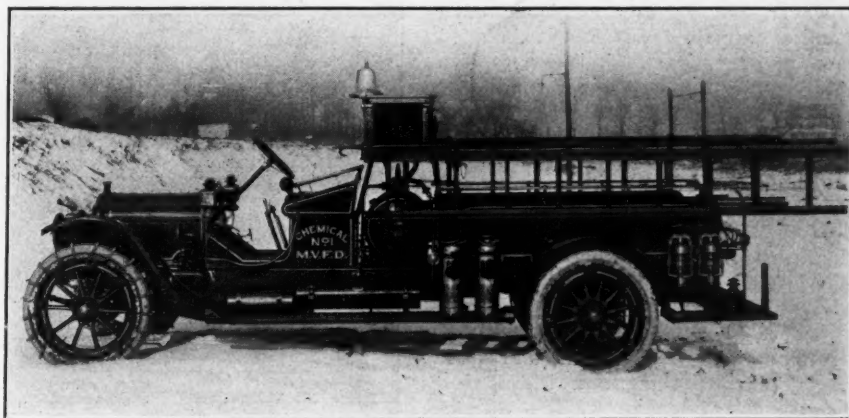
COMBINATION CHEMICAL AND HOSE WAGONS.

The combination apparatus may fairly be called the leading piece of auto fire apparatus manufactured. This, however, does not mean that it is the strongest or most important. There are, however, many more machines of this type in service than of all other kinds combined. No manufacturer fails to make a machine of this class. A combination wagon in the

equine period meant a vehicle carrying a chemical tank, the soda and acid type were the only ones known, and a wagon body carrying about a thousand feet of $2\frac{1}{2}$ -inch hose. The chemical was intended for immediate use on reaching the fire. If not extin-

ple and comparatively inexpensive is in another, heavy, complicated and one of the most costly.

The original simple type of combination wagon has been adhered to in recent heavy purchases made by the New York fire department. The illus-

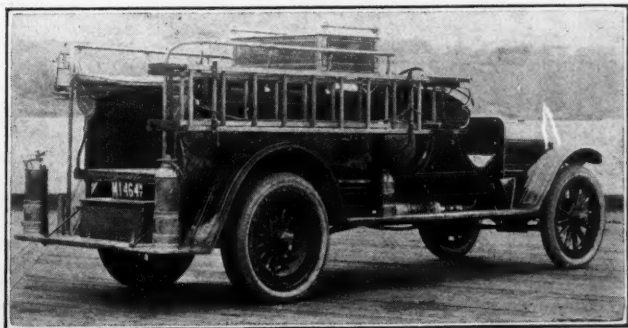


WHITE COMBINATION, 40 HORSEPOWER, MT. VERNON, N. Y.

guished at once, the firemen got out the hose, connected it to a hydrant directly or to a steamer and were ready for more serious business. The first auto apparatus manufactured were of this type. There has been a tendency, however, to increase the size of the wagon, give increased capacity for men, space for ladders even of considerable size and even a gasoline driven pump. So that now a style of apparatus which in one form is sim-

tration shows one of these machines made by the Mack Company. The chemical tank is placed back of the seat. The wagon body has space for men and about 1,000 feet of $2\frac{1}{2}$ -inch hose.

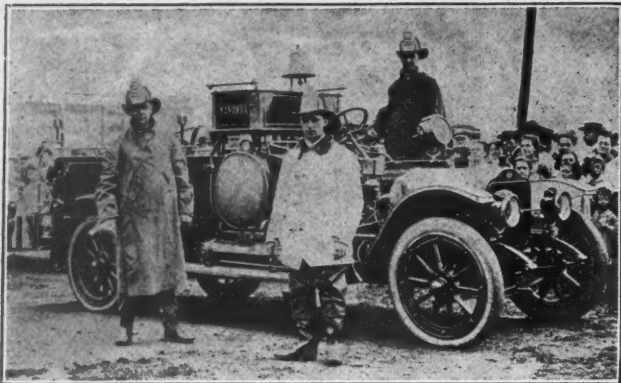
The method of carrying the chemical hose differs, reels behind the seat and a basket behind the seat being the more common. The White Com-



TYPE OF AUTO COMBINATION CHEMICAL ORDERED FROM INTERNATIONAL MOTOR COMPANY FOR NEW YORK CITY.



LARGE COMBINATION WAGON DRIVEN BY STORAGE BATTERY.



KANAWHA COMBINATION CHEMICAL.

pany wagon purchased by Mt. Vernon, N. Y., a 40-horsepower, with Boyd-Kanawha apparatus, and shown on the previous page, employs a basket; but this company, like most others, furnishes either style.

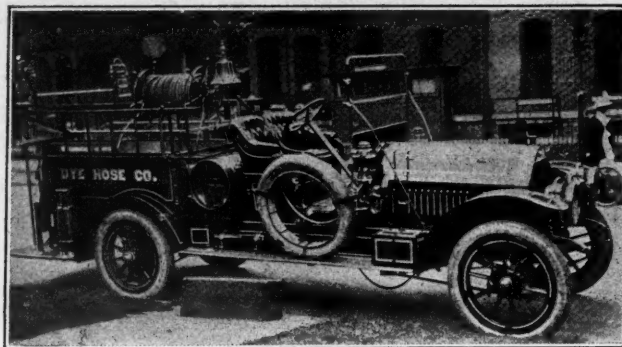
There are many cars made of this same type, and speed is an important consideration. Some manufacturers place two chemical tanks in the car. However, the fighting efficiency of a chemical apparatus is not exhausted when the chemical tank is empty if a water connection is made through the tank. That is, a regular 2½-inch fire hose is connected from the hydrant to a suitable coupling and water forced under hydrant pressure through the tank and the chemical hose to the fire. Where it is expected that the apparatus will be used in this way 1-inch instead of the ¾-inch hose formerly more frequently used is desirable.

A combination chemical and hose deserving special mention is an electrically driven machine used in Springfield, Mass. Outside of the electrical propulsion by storage battery with motors in the wheels, the notable feature is the unusual size of the wagon platform. This advantage is secured by placing the platform higher than the wheels and extending it over them. The same construction is possible with gasoline traction and the same city has similar cars of this style, made by the Knox Company.

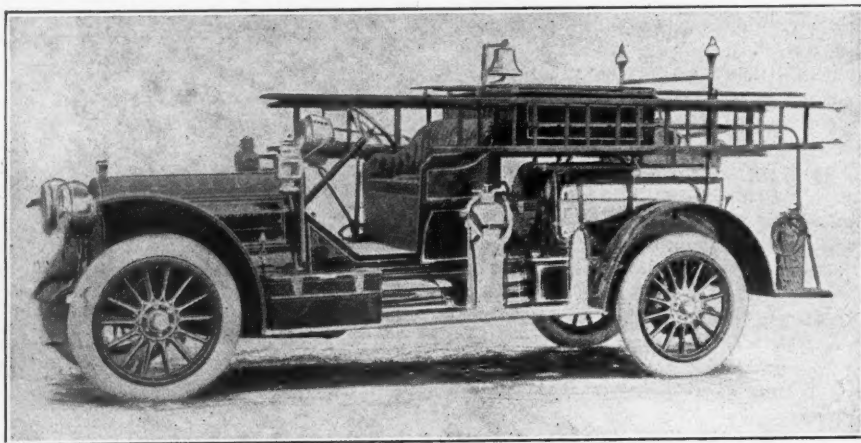
A further complication is introduced into this class by the use of other chemical extinguishers than the old soda and acid tanks. Notable among these is the Kanawha, made by Jones, Boyd & Bro. The chemical used by the Kanawha has the great advantage

that it inflicts little or no injury on goods, thus reducing the fire loss from wetting. Moreover it is said to possess more powerful fire extinguishing properties than the soda compound. The Kanawha is not alone in the use of new chemical devices. The Victor Mctor Company has recently placed

Moreover, there is a water connection for 2½-inch hose, to be used as described. The equipment of ladders is unusually heavy, so that altogether the apparatus is quite a departure from the original type of combination wagon. The combination chemical, hose wagon and pumping engine will



COMBINATION CHEMICAL AND HOSE WAGON USING COMPRESSED AIR FOR THROWING STREAM.



CHEMICAL ENGINE OF LARGE CAPACITY CARRYING LADDERS.

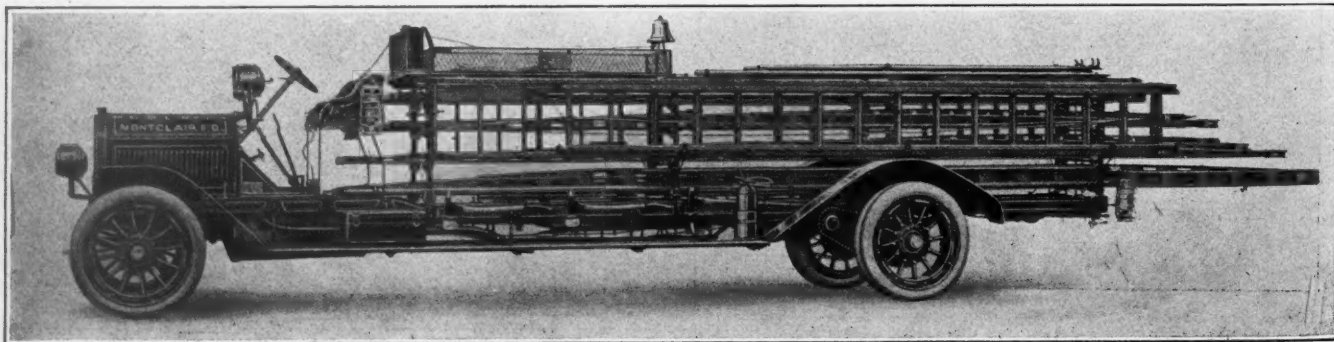
on the market a machine in which the chemical, carbonic acid gas dissolved in water, is thrown upon the fire by compressed air. A machine of this type has been built by the Dye Hose Company, of Albion, N. Y. It was exhibited at a recent firemen's convention at Rochester, where it attracted much attention.

A very powerful type of combination chemical is that made by the Thomas B. Jaffrey Co. for the South Bend, Ind., department. This carries two chemical tanks of seventy gallons capacity each and two separate lines of hose, a decidedly novelty.

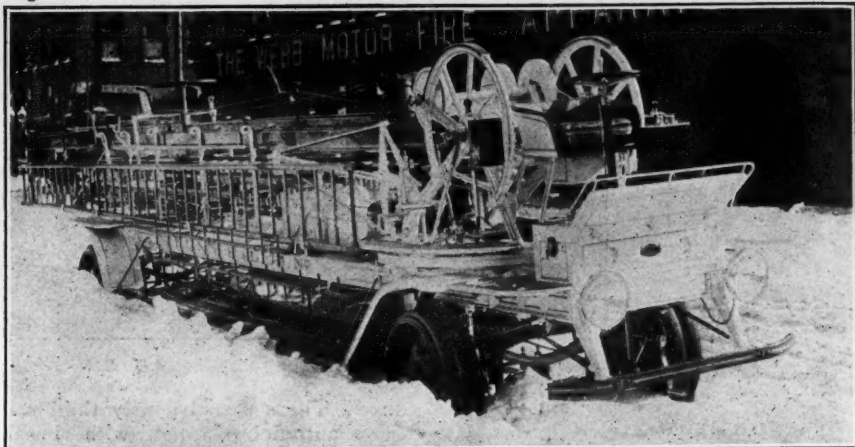
be considered under the pumping engine class.

HOOK AND LADDER TRUCKS.

The hook and ladder truck proper is a large and heavy piece of apparatus. For this reason it is considered by fire authorities as especially desirable that it should be motor-driven. The size and weight, however, make the question of propulsion a somewhat difficult one for manufacturers. This problem is easily met in the city service truck made by the La France Company. This truck simply carries ladders which are removed by the men and set up where needed. The self-



CITY SERVICE LADDER TRUCK.



WEBB TRUCK MADE FOR NEW YORK FIRE DEPARTMENT—LADDER
LIFTED BY ELECTRIC POWER—GASOLINE-ELECTRIC PROPULSION.

raising aerial truck is quite a different piece of apparatus. In the city service truck, shown in the illustration, the shaft of the gasoline engine is connected to a long shaft running under the truck to a counter shaft just in front of the rear wheels. Sprockets and chains on each side of this shaft drive the rear wheels. This style of truck is made in two sizes. That recently delivered to the city of Montclair, N. J., has a four-cylinder 70-horse power motor, giving the machine a rated speed of fifty miles per hour. However, it is not expected under ordinary conditions to exceed a speed of fifteen or twenty miles per hour. The wheel base of this machine is 242 inches. The tires are solid rubber, dual in rear. The ladder equipment is as follows: 50 foot, 35 foot; 28 foot; two 25 foot; 24 foot; one 16 and one 12 foot roof ladders.

In their aerial ladder truck the Seagrave Company use a four-wheel tractor for motive power; the king pin ordinarily connected to the front wheels in a horse-drawn apparatus sets in a suitable casting on the tractor, which is simply a four-wheeled automobile driven in the usual way. The Seagrave Company uses compressed air for hoisting the ladder. The same company also make an aerial ladder in which there are only four wheels. The power is applied to all four

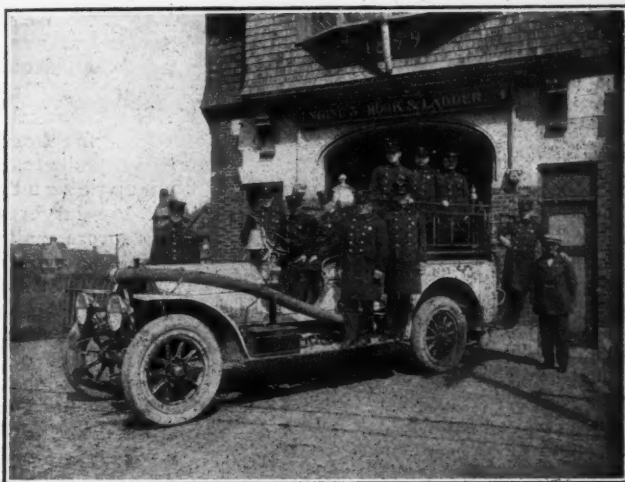
wheels by means of chains and gear. The Couple Gear Company makes an aerial hook and ladder truck, the first one of which was made for the city of Springfield, Mass. Here the power is electricity, supplied by a storage battery and applied by motors placed so as to mesh with a gear in the inner rim of each wheel. Twenty miles an hour is the speed of the truck. The application of power to each wheel is said to tend to prevent skidding, a serious danger in the case of such a long and heavy machine if driven at high speed.

The Webb Company has placed on the market an aerial truck, the first one of which has been delivered to the New York Fire Department. The illustration was taken in St. Louis before the truck was shipped. The truck is classed as a gasoline electric motor hoist truck. It is propelled by a gasoline engine, which drives a generator, the power being applied to the wheels

by motors acting on the inner rims. The gasoline engine which has four cylinders with its generator is mounted near the center of the truck. A motor operates the hoist which raises the 75-foot extension ladder. The base of the ladder rests on a turn table. The truck makes fifteen or more miles an hour. Its weight is about 17,000 pounds.

GASOLINE PUMPING ENGINES.

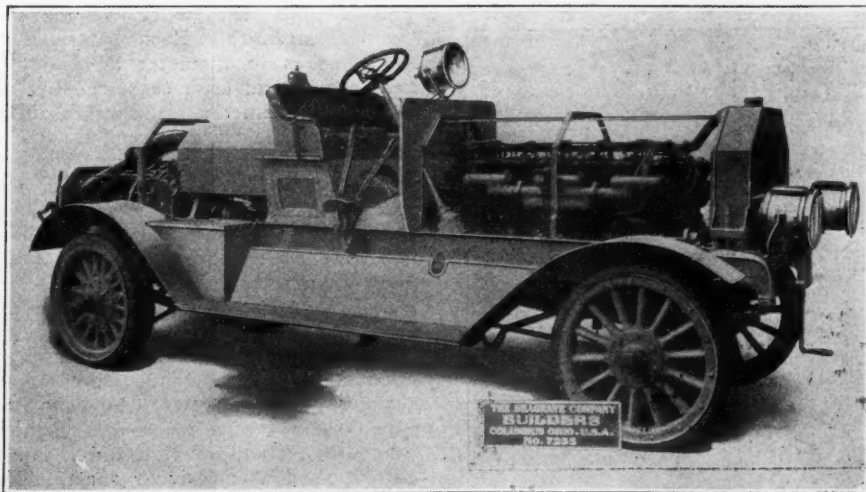
In the ante motor days nearly all pumping engines were steamers of the piston pump pattern. There was a steam cylinder and a water cylinder in direct line and water was forced out both on the up and the down stroke. A few rotary pumping engines were made, but they were never very extensively used. A few gasoline driven pumps had been manufactured, some horse-drawn but more hand-drawn, for use in protecting factories and army barracks. The motor has increased the number of styles. There is the motor-driven and propelled rotary pumping engine, the first one of which was



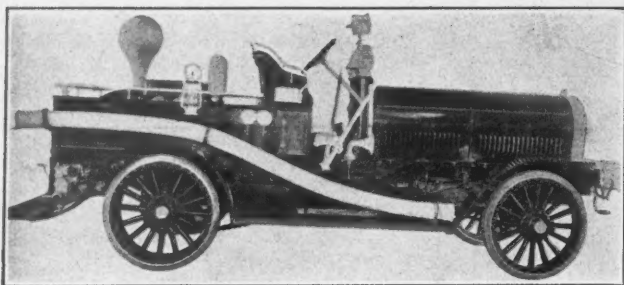
WEBB ROTARY PUMPING ENGINE.

made by the Webb Company, and the motor-driven and propelled piston pumping engine. Both of these machines may or may not carry hose in a wagon body. Motor-propelled engines with steam-driven pumps are made in a variety of styles, each differing from the other so much as to require separate classifications. Finally there are combination wagons with more or less complete chemical and ladder equipments.

A rotary pumping engine has been placed on the market by the Seagrave Company. It is made in two sizes, 700 and 1,000 gallons capacity, with or without hose body, carrying 1,000 to 1,500 feet of hose, and with chemical tank on the smaller size if desired. The motor is six cylinder and develops the maximum horsepower—144—at 700 revolutions, a comparatively slow speed. At the Denver convention last month one of these engines delivered 1,085 gallons through three 100-foot lines of hose carrying shut-off nozzles with 1½-inch tips, the suction lift being 10 feet and the pump pressure 128 pounds. The flexibility of the motor was demonstrated by shutting off any



MULTIPLE STAGE ROTARY PUMPING ENGINE OF LARGE CAPACITY.



GASOLINE DRIVEN PISTON PUMPING ENGINE.

nozzle at will; and even when all three were shut at the same time the motor was not "killed." With all outlets closed the pump gauge will register 345 pounds. The engine is said to have exceeded the manufacturer's rating in an official test under the direction of the Board of Underwriters, delivering 975 gallons at 137 pounds pump pressure.

As an example of the gasoline-driven and propelled piston pumping engine, an illustration of the Waterous engine made for New York City is presented. This is a straight pumping engine, carrying no other equipment of consequence and therefore has a hose wagon stationed with it. It is rated at 700 gallons per minute. Some of the details of construction are as follows: Frame, channel steel; six-cylinder engine, 7½-inch diameter by 8-inch stroke, compressed air starter, weight, 13,700 pounds; wheel base, 144 inches; tread, 62 inches; tires, 42 by 5 inches, front; 42 by 3½ inches, dual, rear; springs, semi-elliptic in front; full platform in rear. The pump consists of four cylinders, 4¾ bore by 8-inch stroke, placed in pairs at an angle of 45 degrees. Power is transmitted from the engine to the pump which is carried by the wagon body. This is geared onto an auxiliary shaft by gears, reducing the speed one-half. This shaft extended is the crank shaft of the pump. The cranks revolve in a case filled with oil—the splash system.

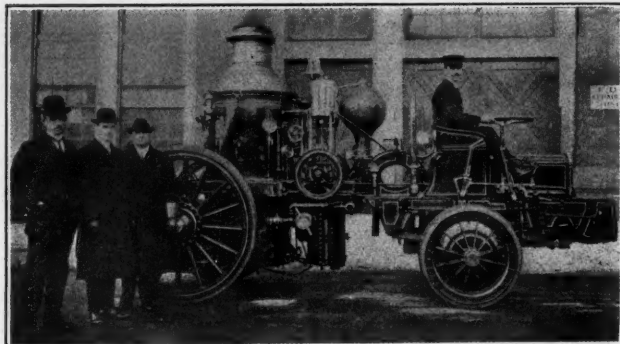
Gasoline-driven and propelled fire engines carrying hose are the original and more common type. As an exam-

ple of this class we present an illustration of the Webb engine which has been in service in Yonkers for several years. The engine is six cylinder, 90 horse power and weighs four or five tons equipped. The wheels are equipped with 6-inch pneumatic tires. The pumping capacity is 700 gallons per minute.

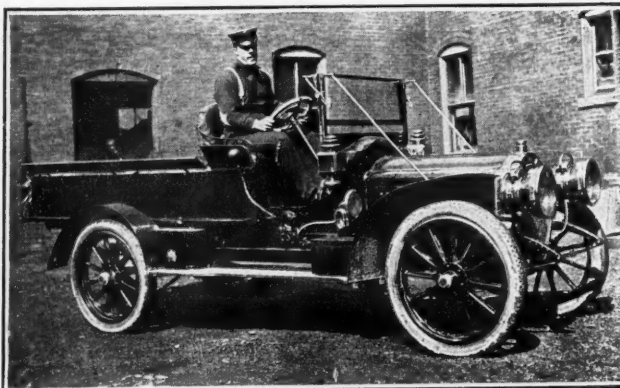
Within the past year there has been a demand for what are called triple combination engines. The first of these we believe was built by the Robinson Company. It carries a chemical tank, pump, fire hose and flight ladders. At the present time all the larger manufacturers make machines of this class. The type is specially interesting at this time because it was the subject of considerable debate at the recent Denver convention. The usefulness of the type was called in question and a resolution introduced condemning it, but this was voted down.

GASOLINE PROPELLED STEAM FIRE ENGINE.

For heavy service in large cities, many chiefs still prefer the steam fire engine but they admit the advantages of motor traction in the way of economy and speed in getting to a fire. To meet this demand tractors were intro-



GASOLINE PROPELLED STEAM FIRE ENGINE.

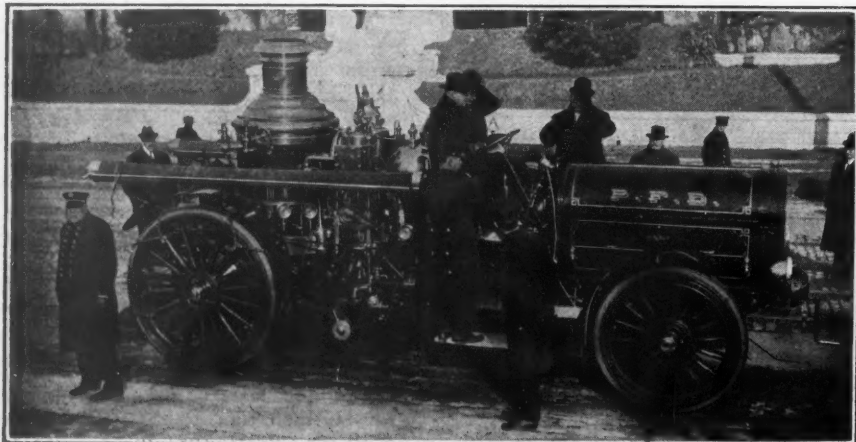


GENERAL UTILITY AND INSTRUCTION WAGON.

mounted on four wheels have been made by two companies.

A Nott engine of this type in service in Paterson is illustrated. The engine itself is a 1,000-gallon capacity Metropolitan. The engine has four cylinders, measuring 5¾ by 8 inches, developing 110 horse power on the brake test. The drive is by chain to sprockets on the rear wheels. The engine is very heavy, weighing about seven tons. It is equipped with wheels of unusual size and strength. Each front wheel is 48 inches in diameter and weighs 650 pounds, and each rear wheel is 60 inches in diameter and weighs 850. The rear wheels are equipped with 6-inch solid Goodrich tires.

The Front-Drive Tractor Company makes a much lighter equipment, the whole apparatus when mounted with a second size Metropolitan engine, 700 gallons' capacity, weighing 9,000 pounds. The tractor itself consists of a gasoline engine and necessary equipment connected by a driving chain to a shaft mounted on two wheels. The axle does not turn when the machine rounds a corner, for if it did it could not be used as a driving shaft. The wheels only turn on pivoted joints.



MOTOR PROPELLED STEAM FIRE ENGINE.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio	Cleveland	Oct. 5, 11 a.m.	Repairing road	Bd. of Supervisors.
New York	Lockport	Oct. 5	Constrn. county and town roads	Commissioners.
Illinois	Batavia	Oct. 5	Grading highway	J. Oberweiss, City Clerk.
Ohio	Massillon	Oct. 5, noon	Constrn. cement sidewalk, curb & gutters.	J. A. McLaughlin, Clk. Pub. Ser.
Pennsylvania	Wilkes-Barre	Oct. 7, noon	Resetting curb	F. H. Gates, City Clerk.
Canada	Hanover	Oct. 7, 7 p.m.	Constrn. 16,000 ft. cement sidewalks	John Taylor, Town Clerk.
Ohio	Steubenville	Oct. 7	Constrn. brick pavement	T. M. Kennedy, Clerk.
New Jersey	Vineland	Oct. 7	Constrn. bituminous gravel road	C. V. Marshall, Clerk.
New York	New York	Oct. 7, 2 p.m.	Furn. granite paving blocks	A. J. O'Keeffe, Comr.
New York	Utica	Oct. 7, 9 a.m.	Oiling 28,800 sq. yds. highway	W. H. Morton, Sec.
Mass.	Boston	Oct. 7, noon	Constrn. macadam roadway	L. K. Rourke, Comr. Pub. Wks.
Mississippi	Gulfport	Oct. 7, 10 a.m.	Constrn. several roads	Lemuel Shipman, Aud.
Indiana	Fowler	Oct. 7, 1 p.m.	Constrn. free gravel road	G. W. Stoner, Co. Aud.
Indiana	Jeffersonville	Oct. 7, 10 a.m.	Constrn. 2 macadam roads	Bruce Craig, Co. Surv.
Indiana	Greensburg	Oct. 7	Constrn. brick and macadam, cost \$23,000.	L. S. Core, Co. Aud.
New Jersey	Totowah	Oct. 7, 8 p.m.	Constrn. macadam road	F. L. Van Houton, Boro. Clk.
Indiana	Washington	Oct. 8, 2 p.m.	Constrn. road	Horace Blakely, Co. Aud.
Indiana	Bloomington	Oct. 8, 2 p.m.	Constrn. 4 stone roads	T. H. Kimball, Co. Aud.
Indiana	Marion	Oct. 8, 2 p.m.	Constrn. gravel road	J. T. Scott, Co. Aud.
Indiana	Vincennes	Oct. 8, 2 p.m.	Constrn. 2,675 ft. gravel roads	Co. Comrs.
Indiana	Crown Point	Oct. 8, noon	Constrn. gravel road	A. G. Fisher, Co. Aud.
Indiana	Motticello	Oct. 8, 10 a.m.	Constrn. macadam road	H. M. Aaen, Co. Aud.
N. Dakota	Williston	Oct. 8, 10 a.m.	Constrn. 8,500 cu. yds. road grading	J. F. Goldenbogen, Clk. Bd. Comrs.
Indiana	Tell City	Oct. 8, 7:30 p.m.	Grading street	L. Siebert, City Clerk.
Indiana	Covington	Oct. 8, 1 p.m.	Imp. 2 highways in Jackson Twnshp.	W. B. Gray, Co. Aud.
Arkansas	Little Rock	Oct. 8, 3 p.m.	Constrn. 14,000 yds. pavement	E. A. Kingsley, Engr.
New York	Brooklyn	Oct. 9, 11 a.m.	Constrn. pavements on a number of sts.	A. E. Steers, Boro. Pres.
Rhode Island	Providence	Oct. 9, noon	Constrn. 2½ miles road	J. H. Edwards, Chrmn. Board.
New Jersey	Trenton	Oct. 9, 2:30 p.m.	Constrn. bit. concrete pavem't on Mott st.	Frank Thompson, City Clerk.
Ohio	Harshman	Oct. 9	Grading and graveling new township.	A. Clingman, Clerk.
Ohio	Cleveland	Oct. 9, 11 a.m.	Improving several roads	J. M. McBride, Boro. Engr.
W. Virginia	Huntington	Oct. 9, 1 p.m.	Paving Bridge st.	A. B. Maupin, City Engr.
Rhode Island	N. Providence	Oct. 9, noon	Constrn. 2½ miles State highway	J. H. Edwards, Chrmn. State Bd.
New Jersey	Cranford	Oct. 9, 8 p.m.	Constrn. 3,500 ft. concrete curb	E. Mosher, Township Engr.
Missouri	Fulton	Oct. 10	Constrn. oil gravel road	P. D. Thurmond, City Engr.
Missouri	St. Louis	Oct. 11	Constrn. sidewalks, cost \$13,000.	Bd. of Local Imp.
Ohio	Columbus	Oct. 11, 2 p.m.	Constrn. sulphite treated macadam, 2.55 miles	
Iowa	Panora	Oct. 11, noon	Constrn. 1 mile bituminous macadam	Jas. R. Marker, St. Hwy Comr.
Ohio	Columbus	Oct. 11, 2 p.m.	Constrn. cement sidewalks	Geo. Goetzman, Town Clerk.
Alabama	Greensboro	Oct. 11, 1 p.m.	Constrn. 2.51 miles bituminous concrete and brick in Ashland Co.	J. R. Marker, St. Hwy Comr.
Ohio	Columbus	Oct. 11, 2 p.m.	Constrn. gravel road	W. S. Keller, State Hwy Engr.
			Constrn. 1.93 miles brick in Springfield.	
			Constrn. .97 miles gravel in Newton	
			Constrn. 1 mile macadam in Mifflin	
			Constrn. .77 miles brick in Wadsworth.	
			Constrn. 2.09 miles macadam in Mifflin.	
			Constrn. 1 mile macadam in Pike Co.	
			Con. 1 m. bit. surface conc. in Vermillion.	
			Constrn. 3.45 miles macadam in Jennings.	
			Constrn. 2 miles gravel macad. in Union.	
			Constrn. 1 mile gravel in Jackson.	
Indiana	Millersville	Oct. 11, 10 a.m.	Imp. highway	Jas. R. Marker, St. Hwy Comr.
Ohio	Cleveland	Oct. 12, noon	Furn. asphalt cement for street repairs.	W. T. Patten, Co. Aud.
Kansas	Manhattan	Oct. 12, noon	Constrn. stone roads	W. J. Springborn, Dir. Pub. Ser.
Mississippi	Booneville	Oct. 14	Constrn. road improvements	County Clerk.
Alabama	Rockford	Oct. 15	Constrn. road improvements	D. L. Holley, Sec.
Pennsylvania	Harrisburg	Oct. 15, 10 a.m.	Surfacing 5 miles road	J. A. Crawford, Probate Judge.
New York	Dunkirk	Oct. 15, 10 a.m.	Constrn. 17 sections of State highways.	E. M. Bigelow, St. Hwy Comr.
Mississippi	Laurel	Oct. 15, 2 p.m.	Constrn. 1,200 yds. pavement	R. H. Heppell, City Clerk.
Alabama	Marion	Oct. 17	Constrn. 18,000 yds. brick or wood paving.	S. M. Jones, Chrmn. Com.
			Constrn. 4 miles West Perry Road.	Geo. C. Scales, Co. Highway Engr., Montgomery.
Alabama	Marion	Oct. 21, 2 p.m.	Con. 4 miles sand clay & 4 gravel rds.	G. C. Scales, Engr.
Alabama	Linden	Oct. 22, 10 a.m.	Constrn. 4 miles sand clay road	County Commissioners.
Alabama	Birmingham	Oct. 24, noon	Constrn. 3 miles chert road	County Board.
Ohio	London	Oct. 27	Constrn. gravel roads	H. L. McCafferty, Co. Surv.
SEWERAGE				
S. Dakota	Sioux Falls	Oct. 7, 9 a.m.	Constrn. storm water sewers on sev. sts.	W. C. Leyse, City Aud.
New Jersey	Westfield	Oct. 7, 8 p.m.	Constrn. 250 ft. 8-in. sanitary sewer	A. W. Vars, Town Surv.
New York	L. I. City	Oct. 7, 11 a.m.	Constrn. clay pipe sewer	M. E. Connolly, Boro. Pres.
Missouri	Webb City	Oct. 7	Constrn. 2,660 ft. 8-in. clay pipe sewer	E. W. Robinson, City Clerk.
Minnesota	Pipestone	Oct. 7, 8 p.m.	Constrn. covered tile ditch	S. W. Funk, City Recorder.
California	Hemet	Oct. 7	Constrn. sewers, cost \$44,000	City Clerk.
New Jersey	Red Bank	Oct. 7, 5 p.m.	Imp. disposal plant	A. T. Harrison, Boro. Clerk.
New York	Ballston Spa	Oct. 8	Constrn. tile sewers, 2 streets.	W. H. Lawrence, Vil. Clerk.
Pennsylvania	Hanover	Oct. 8, 6 p.m.	Constrn. storm water drain	Commissioners.
New York	Brooklyn	Oct. 9, 11 a.m.	Constrn. a number of sewers	A. E. Steers, Boro. Pres.
Georgia	Adel	Oct. 10, 4 p.m.	Constrn. 5 miles 8 to 12-in. pipe sewers.	F. T. Leggett, Mayor.
Mississippi	Laurel	Oct. 15, 2 p.m.	Constrn. 4,000 ft. 12 to 24-in. sewers.	G. M. Jones, Sec.
Illinois	Fulton	Oct. 19, 9 a.m.	Constrn. system of sewers	M. W. Ingwersen, Pres. B. L. I.
Minnesota	Pipestone	Oct. 21, 8 p.m.	Constrn. a number of sewers	S. W. Funk, City Recorder.
Iowa	Esterville	Oct. 31, noon	Constrn. 1,250 ft. 8-in. clay pipes	N. B. Egbert, City Clerk.
Iowa	Tipton	Jan. 15	Constrn. sewers	P. D. Ketelsen, City Clerk.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
WATER SUPPLY				
Canada, Ont.	North Bay	Oct. 5, noon	Constrn. 750 ft. steel intake, 2,300 ft. 12-in. c.l. pipe, &c.	T. M. Colgan, Comrs. Works. City Clerk.
Iowa	Stuart	Oct. 5	Constrn. well 10-ft. diameter	N. A. Gillman, City Engr.
Washington	North Yakima	Oct. 7	Constrn. gravity water system	M. J. Boyd, City Aud.
N. Dakota	Valley City	Oct. 7, 8 p.m.	Furn. 753 ft. 4-in. water main	W. E. Sley, Mayor.
Iowa	Oxford Junction	Oct. 7, 6 p.m.	Constrn. 600 ft. 4-in. c. l. mains	J. W. Chrisford, Dir.
Ohio	Lakewood	Oct. 7, noon	Constrn. water mains, valves, &c.	A. R. Watkins, City Aud.
N. Dakota	Fargo	Oct. 7, 5 p.m.	Constrn. 380 ft. 6-in. main	S. Thompson, City Clerk.
New Jersey	Trenton	Oct. 9, 2 p.m.	Filling in concrete retaining wall in pumping station	R. C. Ozman, City Clerk.
Nebraska	Lincoln	Oct. 10	Installing 6,000,000 gal. pumping engine	Wm. Barneck, City Engr.
Minnesota	Albert Lea	Oct. 11, 5 p.m.	Constrn. 3,744 ft. 6-in. mains, 3 hydrants, 7 gate valves	O. O. Dahl, Vil. Clerk.
N. Dakota	Litchville	Oct. 11, 8 p.m.	Sinking artesian well	R. W. Wettengald, City Clerk.
Iowa	Dunlap	Oct. 14, 8 p.m.	Constrn. extension to water works	D. H. Runnel, Dir. Pub. Ser.
Ohio	Salem	Oct. 11, noon	Building addition to pumping station	W. C. Langfitt, Lt. Col. Engrs.
Dist. Columbia	Washington	Oct. 14, noon	Constrn. concrete paving in reservoir	W. G. Parker, Pres. Comrs.
Virginia	Portsmouth	Oct. 15, noon	Furn. 9,700 tons 4 to 6-in. c.-l. pipe, Valve boxes, &c.	Bd. Water Supply.
New York	New York	Oct. 15, 11 a.m.	Furn. 3 steel floats, 650 ft. steel pipe, &c.	T. R. Fitzgerald, Sec. Trustees.
Iowa	Muscatine	Oct. 15	Constrn. 200,000 gal. and tower	C. C. Crew, Consulting Engr.
Texas	Port Arthur	Oct. 15, 3 p.m.	Constrn. about 34,000 ft. wood pipe line	J. P. Vroman, Sec. Bd. Pub. Ser. Comrs.
California	Los Angeles	Oct. 15, 2 p.m.	Furn. st'l rivets for San Fernando siphon	D. M. Armstrong, Dir. Pub. Ser.
Ohio	Alliance	Oct. 16, noon	Constrn. storage reservoir	S. A. Hoskins, Pres
Ohio	Lima	Oct. 17	Constrn. concrete reservoir at hospital	L. Bamberger, City Clerk.
Indiana	Huntington	Oct. 21, 7.30 p.m.	Con. 6-in. water main	A. B. O'Brien, Sec.
Louisiana	Morgan City	Oct. 22, 8 p.m.	Constrn. pumping station	W. M. Sleeper, Chrmn. Com.
Texas	Waco	Oct. 28	Con. reinforced conc. water works intake	B. A. Bescher, City Clerk.
Indiana	Richmond	Oct. 30, 10 a.m.	Furn. water to city for 25 years	Mayor Zimmerman.
Virginia	Richmond	Oct. 30	Constrn. water works	
LIGHTING AND POWER				
Dist. Columbia	Washington	Oct. 7, 3 p.m.	Furn. lamp standards and brackets	O. Wenderoth, Superv. Arch.
W. Virginia	Elkins	Oct. 8, 1.30 p.m.	Installing elec. and gas light fix. in jail	F. A. Rowan, Clerk.
Ohio	Cleveland	Oct. 8	Furn. 6 1,000 h.-p. boilers	W. H. Kirby, Sec.
Indiana	Crown Point	Oct. 9	Furn. lighting fixtures	C. A. Johnson, Co. Aud.
Illinois	Sandwich	Oct. 11	Constrn. municipal lighting plant	City Clerk.
Dist. Col.	Washington	Oct. 15, 10.30 a.m.	Furn. lighting material for Panama locks	General Purch. Agt.
Dist. Col.	Washington	Oct. 21 3 p.m.	Furnishing lighting, heating, electrical conduits, wiring, & interior lighting fixtures at Moorhead, Minn.	Oscar Wenderoth, Supv. Archt.
Canada	Yorkton, Sask.	Oct. 31, noon	Furn. 500 h.-p. Diesel engines, tungsten st. lighting apparatus, &c.	M. M. Ingles, Elec. Engr.
FIRE EQUIPMENT				
Dist. Colum.	Washington	Oct. 15, 2 p.m.	Furn. 15,000 ft. 2½-in. cotton-covered, rubber-lined hose	H. Rudolph, Comr.
BRIDGES				
California	Ventura	Oct. 5	Constrn. two concrete bridges	J. B. McCloskey, Co. Clerk.
Oklahoma	Wagoner	Oct. 5, 5 p.m.	Constrn. 4 bridges	J. C. McElroy, Clerk.
Kansas	Leavenworth	Oct. 7, noon	Constrn. number of bridges	J. A. Hall, Co. Clerk.
Utah	Salt Lake City	Oct. 7, 10 a.m.	Constrn. reinforced concrete bridges	J. C. Mackey, Chrmn. Comrs.
Indiana	Bedford	Oct. 8	Constrn. reinforced concrete bridge	E. W. Edwards, Co. Aud.
W. Virginia	Valley Head	Oct. 8	Constrn. steel and concrete bridge	F. A. Rowan, Co. Clk, Elkin, Va.
Indiana	Williams	Oct. 8	Constrn. concrete bridge	E. W. Edwards, Co. Aud., Bedford.
W. Virginia	Elkins	Oct. 8, 1.30 p.m.	Constrn. concrete bridge	W. A. Rowan, Clk.
California	Pasadena	Oct. 8	Constrn. reinforced concrete culverts	H. Dyer, City Clerk.
Texas	Fort Worth	Oct. 23, noon	Constrn. 2 concrete viaducts	J. A. Mulholland, Co. Aud.
MISCELLANEOUS				
California	Los Angeles	Oct. 7	Constrn. wharf and railroad track	Board of Pub. Works.
California	Fresno	Oct. 7	Furn. road oiling machine	W. H. Ryan, City Clerk.
Florida	Bradentown	Oct. 7	Constrn. court house and jail	R. H. Roesch, Clerk.
Texas	Galveston	Oct. 7, 11 a.m.	Constrn. jail	J. M. Murch, Co. Aud.
Pennsylvania	Wilkes-Barre	Oct. 7, noon	Constrn. retaining wall	F. H. Gates, City Clerk.
Louisiana	New Orleans	Oct. 8, 3 p.m.	Constrn. Casino & boat house in City Pk.	Chas. Dittman, Chrmn. Comm.
Georgia	Athens	Oct. 10, noon	Furn. and installing fittings of jail	J. M. Hodgson, Ch. Bd. Comrs.
New York	New York	Oct. 10, 3 p.m.	Constrn. comfort station in Kings Park	C. B. Stover, Pr. Park Board.
Indiana	Richmond	Oct. 12, 11 a.m.	Con. wood floors on number of bridges	L. S. Stowman, Co. Aud.
Pennsylvania	Edgewood	Oct. 12, noon	Imp. river bed	D. C. Neal, Boro. Engr.
No. Dakota	Bismarck	Oct. 15, 2 p.m.	Furn. 10,000 automobile tags, 1,000 motor cycle tags	P. D. Norton, Sec. of State.
Georgia	Augusta	Oct. 15, 4 p.m.	Constrn. locks and gates in canal	Nisbet Wingfield, Chief Engr.
California	Los Angeles	Oct. 18	Constrn. concrete wharf	Board of Pub. Works.
Florida	Pensacola	Oct. 21, 4 p.m.	Furn. uniforms for Police & Fire Dept.	L. G. Aymard, City Clk.
New York	New York	Oct. 24, 2 p.m.	Constrn. & equipping asphalt plant	Geo. McAneny, Boro. Pres.

STREET IMPROVEMENTS

Talladega, Ala.—Paving of various streets will shortly be commenced.

Little Rock, Ark.—Prominent citizens from towns between Little Rock and Texarkana have launched a movement for construction of highway from Texarkana to Little Rock, distance of 160 miles.

Alhambra, Cal.—Cedar st., between Raymond and Marengo ave., has been ordered improved in accordance with petition of property holders.

Bakersfield, Cal.—First steps have been taken to secure splendid system of highways for Kern County.

Chico, Cal.—Engineers W. S. Caruthers and W. P. Ireland of State Highway Commission state that State road will pass through this city on Main st. and out on Shasta rd. to north.

East Sacramento, Cal.—Permanent pavement of J st., from Thirty-first st. to North Levee is recommended.

Elmhurst, Cal.—Proposed extension of E st. through portion of McKinley Park is being considered.

Los Angeles, Cal.—Instructions to prepare plans for paving Los Angeles st. from First to Second and Second st. from Los Angeles to Main st. with asphalt have been sent to City Engineer by Board of Public Works.

Los Angeles, Cal.—Petitions have been received for improvement of various streets.

Marysville, Cal.—Paving of Fourth st. from D to J is contemplated.

Pomona, Cal.—It is expected that active construction will shortly be commenced on Ocean-to-Ocean highway from Los Angeles through Colton to Yuma.

Sacramento, Cal.—City is planning to have municipal street repairing plant.

San Francisco, Cal.—City Engineer has recommended that city pave its portion of Thirteenth and Fourteenth aves., fronting on Presidio parkway. Cost of paving with bitumen these aves. from Geary to Lake st. was estimated at \$34,000, an additional \$1,800 being required for paving in front of Sutro School.

San Francisco, Cal.—The South Polk Street Improvement Association in communication to Board of Supervisors states that it has been organized by more than 300 property owners and business men for purpose of having Polk st. repaved from Market to Post, and also to secure other improvements for that neighborhood.

Tehama, Cal.—At special meeting held by Trustees ordinance was passed for laying of cement sidewalks on Main st.

and D st. In all nearly mile of pavement work will be started at once.

Washington, D. C.—Federation of Citizens' Associations has decided to ask district heads to include item of \$400,000 for improvement of suburban streets and equal amount for city streets.

High Springs, Fla.—Property owners have voted in favor of issuing \$7,500 of 6 per cent. improvement bonds, proceeds to be spent in extending concrete sidewalks and finishing several hard streets.

Miami, Fla.—Dade County has voted issuance of \$300,000 of bonds for paving roads with brick.

Miami, Fla.—Bond election for good roads has been carried by large majority.

St. Augustine, Fla.—Opening of Spanish st. through from Treasury st. to Cathedral pl. is being discussed.

Atlanta, Ga.—The Aldermanic Board has passed up Ivy st. regrading project, with proviso that work should not begin until Peachtree st. is finished between Harris and Baker sts.

Atlanta, Ga.—Resolution has been passed providing that \$3,000 be appropriated to pave South Blvd., and \$3,000 appropriated to pave E. Fair st. be transferred to Georgia ave., for widening, regrading and repaving.

Waycross, Ga.—Bond issue of \$100,000 will shortly be sold for public improvements.

Moscow, Idaho.—City Engineer H. J. Smith has completed detail figures for improvement district, estimated cost of which is placed at \$183,799.78. This improvement calls for 69,061 yds. of paving and 18,500 lin. ft. of curbing, 3,000 yds. of macadam excavation, 12,000 yds. of earth excavation for paving, 5,000 yds. of embankment excavation, 50 cu. yds. of retaining walls, 3,900 lin. ft. of header blocks, 30 catch basins; No. 1, 30 catch basins; No. 2 and 40 curb inlets, 37 new manholes for storm sewer system and 26 old manholes to adjust; 8,026 cu. yds. excavation for sewer pipes and 15,280 lin. ft. of vitrified sewer pipe ranging in size from 8 to 24-ins. in diameter.

East St. Louis, Ill.—Board of Local Improvement of East St. Louis has decided to pave Third st. from Missouri ave. to St. Clair ave., and St. Louis, Summit, Illinois and Ohio aves. from Third st. to Collinsville ave.

Peoria, Ill.—Paving of Catherine, Washington and Peoria st. has been authorized.

Peoria, Ill.—Proposition of improving road from end of Perry ave. to Springdale Cemetery is being considered.

Decatur, Ind.—Council has advocated building of three more brick streets in this city.

Huntington, Ind.—Petition has been filed with Auditor Guthrie for improvement of road in Rock Creek Township.

Indianapolis, Ind.—Board of Public Works has adopted resolution for paving South West st., from Washington st. to Kentucky ave. Estimate of cost, based on wood block material, is \$18,277.

Council Bluffs, Ia.—Repairing of road between Council Bluffs and Loneland is recommended.

Des Moines, Ia.—City Council has decided to improve Elm st. by paving with vitrified brick.

Newton, Ia.—City Council has under consideration the passing of resolution of necessity for paving and curbing for year 1913. Quantities, about 28,000 ft. of curbing and 60,000 sq. yds. of concrete paving. W. F. Bvers, City Engineer.

Cumberland, Md.—City Council has decided to complete paving of Baltimore st. with asphaltum.

Cumberland, Md.—Ordinance providing for paving, sewerage, grading and otherwise improving Green st. from its intersection with Lee st. to Brook ave. is being considered.

Elkton, Md.—Cecil County Commissioners have sold to Townsend Scott & Son, of Baltimore, \$25,000 worth of road bonds.

Haverhill, Mass.—Order for macadamizing of Hildale ave., from Broadway to Lafayette st., at cost of about \$2,500 has been passed by Municipal Council.

New Bedford, Mass.—Widening of Union st. is petitioned for.

Uxbridge, Mass.—State Highway Commission will award contract for building another section of State highway in Uxbridge, work to be completed by Dec. 1. Work is to be begun at Northbridge line and will extend southwesterly for two-fifths of a mile. It is expected to require 200 cu. yds. of excavation, 100 cu. yds. of gravel from outside the highway location, 10 cu. yds. of ledge excavation, 1,060 cu. yds. of broken stone for underdrains, 4,300 cu. yds. of bituminous surfacing, 20 ft. of 12-in. clap pipe and 700 ft. of fencing. Road is to be treated with hot tar, over which fine stone will be spread and rolled, and then another layer of hot tar and fine stone.

Petoskey, Mich.—Emmet County will ask limit of three mills tax for road improvements this year.

Duluth, Minn.—In accordance with wishes of property owners on Twenty-seventh ave. West, Board of Public Works has readvertised for bids for paving of avenue from Michigan st. to Fifth st.

Duluth, Minn.—Duluth has been assured of direct paved thoroughfare from center of city to West Duluth.

St. Paul, Minn.—It is expected that St. Louis County will issue bonds for building roads. J. H. Mullen, Assistant State Highway Engineer, reports that St. Louis County is working to improve roads between Duluth and the iron ranges and to connect ranges.

St. Louis, Mo.—Board of Public Improvements has recommended alley and sidewalk improvements at total cost of \$61,091. Ordinances were ordered drawn for alley and sidewalk work, with estimated cost as follows: Alleys—Between Spring, Thirty-ninth, Magnolia and Botanical, \$2,492; between Etzel, Julian, Blackstone and Goodfellow, \$2,076; between Meramec, Gasconade, Compton and Virginia, \$3,544; from Vandeventer to Warne, and between Palm and Natural Bridge, \$2,526; between Cottage, Kennerly, Cora and Marcus, \$3,007; between Hartford, Arsenal, Morgan Ford and Alfred, \$2,451; from Rosedale eastwardly for 600 ft., and between Berlin and right of way of St. Louis, Kansas City and Colorado Railroad, \$1,348; from Gustine to Russell pl., between Wyoming and Connecticut, \$2,821; between Wyoming, Connecticut, Bent and Morgan Ford, \$3,697; from Clara to Goodfellow, between Theodora and Cote Brillante, \$5,269; between Castleman, Shaw, Klemm and Tower Grove, \$2,147; north from Russell pl. to Oak Hill, between Hartford and Arsenal, \$2,532; between Wells, Easton, Laurel and Rowan, \$2,493; between De Giverville, Westminster, Laurel (partly private street) and Hamilton, \$3,789.

Sidewalks—On Compton, between Liberty and Neosho, \$760; on south side of Arsenal, between Morgan Ford and King's Highway, \$1,991; north side of Angelica, between Twentieth and Twenty-fifth, \$1,113; south side of Angelica, between Blair and Twenty-fifth, \$1,819; Arlington, between North Market and St. Louis, \$1,294; Bulwer, between Grand and Prairie, \$632; Clara, between North Market and St. Louis, \$2,157; Clark, between Prospect and Spring, \$1,080; Clarence, between Natural Bridge and Farlin, \$35; west side of Compton, between Winnebago and Miami, \$151; Fassen, between Virginia and Alabama, \$141; Forest, between Manchester and Plateau, \$294; Hereford, between Bischoff and Northrup, \$3,153; Lee, between Newstead and Taylor, \$2,437; north side of Linton, between Conde and Twentieth, \$198; Leffingwell, between St. Louis and Dodier, 513; north side of Manchester, between Sublette and Tamm, \$1,098; west side of Michigan, between Bates and Eichelberger, \$854; east side of Michigan, between Bates and Eichelberger, \$679.

Butte, Mont.—Resolutions have been presented calling for grading of Front st., from east line of Kaw ave. to east line of Montana st. Estimated cost of improvement on taxpayers of district is 75 cents per linear foot.

Camden, N. J.—Ordinance has been passed directing paving of Lemon st. from Haddon ave. to Camden and Atlantic Railroad with vitrified brick on 4-in. concrete foundation.

Elizabeth, N. J.—Ordinances have been passed for improvement of various streets. A. A. Stein, Mayor.

Paterson, N. J.—Improvement of Market st. is being considered.

Perth Amboy, N. J.—Ordinance has been passed to pave Water st., from Smith st. to Lewis st. for width of 30 ft. in middle thereof with 2-in. asphalt blocks with appurtenances; also to pave Paterson st., from State st. to Madison ave., with concrete pavement with bituminous top, together with curb, water and sewer connections. W. La Roe, City Clerk.

Roselle, N. J.—Ordinance has been passed on third and final reading providing for laying and maintenance of sidewalks in various streets in southeastern section of borough, including Rivington, Frank, Morris, Warren,

Spruce and Grand sts., Tenth and Twelfth aves.

Roselle Park, N. J.—It has been decided by Borough Council to readvertise for bids for paving of Chestnut st.

Brooklyn, N. Y.—Borough President Steers of Brooklyn and Borough President Connolly of Queens will meet to consider proposal to build auto highway between park system of Brooklyn and park system of Queens. Proposed road will give direct connection with Long Island Motor Parkway.

Brooklyn, N. Y.—New boulevard leading from Brooklyn into heart of Long Island has been proposed by Chief Engineer Nelson P. Lewis of Board of Estimate.

Catskill, N. Y.—Sale of \$52,000 worth of Greene county highway bonds will be held in Court House on Oct. 7, at 10 o'clock in the forenoon.

Fulton, N. Y.—Petition has been filed with Board of Public Works by majority of property owners along W. First st., between Curtis and south city line, requesting that width of proposed new concrete pavement be changed from 16 to 24 feet, with concrete curbs and gutters.

Newtown, L. I., N. Y.—Resolutions have been passed by Newtown Local Board for 14 new public improvements, total cost of which is estimated at \$175,000. Proceedings were initiated for regulating, grading, curbing and laying sidewalks in the following streets at estimated cost named: Clermont ave., from Grand st. to Mueller st., \$37,000; Perry ave., from Mueller to Rush st., \$42,200, both in Maspeth; Fairview st., from Forest ave. to Gates ave., Ridgewood, \$3,800, and in Ninth st., Long Island City, from Van Alst ave. to East ave., \$1,300. Petitions were approved for regulating and grading Creek st., Long Island City, from Borden ave. to Hunter's Point ave., \$8,600; for regulating and paving with sheet asphalt, on a concrete foundation, Ditmars ave., from Second ave. to Crescent st., \$20,700, and for paving Crescent st., Long Island City, from North Jane st. to Wilbur ave., with granite block, and from Wilbur ave. to Webster ave., half a mile, with wood block, \$31,800.

Sag Harbor, L. I., N. Y.—Trustees of village are arranging to build mile of gravel highway connecting new Easthampton-Sag Harbor State road with main roads of Sag Harbor village. Survey has been made by I. C. Byram, of this place, which calls for 6-ft. or 10-ft. cut at Snooksville hill, and for road 16 ft. wide and with 6 inches of Peekskill gravel for top dressing.

Stamford, N. Y.—Bids will be received by Board of Trustees up to noon Oct. 10 for purchase of bonds in sum of \$12,000 for construction of State highway through Stamford.

Watertown, N. Y.—Proposition is being considered providing for issuance of \$50,000,000 in bonds for improving State and county highways.

New Bern, N. C.—Improving of Walker road is being discussed.

Raleigh, N. C.—Both sidewalks on Hillsboro st. from Salisbury to West st. and from Saunders st. to city line have been ordered paved by Board of Aldermen.

Raleigh, N. C.—Work of laying concrete paving with bitumen binder will begin in few days on Davie st. between Wilmington and Blount, property owners to pay half and city to pay other half. Cost will be \$1.24 sq. yd.

Cleveland, O.—Bids will be received at office of City Auditor, room 213, City Hall, until 12 noon, Oct. 7, for purchase of \$35,000 grade crossing coupon bonds. Thomas Coughlin, City Auditor.

Hubbard, O.—Hubbard township and village will ask electors to give right for boards to issue bonds in sum of \$2,200 for purchase of steam road roller, to be used in contemplated improvement of roads in that township.

Toledo, O.—Question of authorizing issue of \$750,000 bonds for park and boulevard improvements and extensions will be submitted to voters at November election.

Youngstown, O.—Bids will be received by D. J. Jones, City Auditor, at 2 p. m., Oct. 21, for following improvements: \$4,785 for paving Earle st., \$9,095 for paving Homer ave., \$4,865 for paving Erie st., \$12,440 for paving Woodward ave., \$11,240 for paving New York ave., \$4,355 for paving Darrow st., \$5,860 for paving Hughes st., \$1,005 for paving Garland ave., \$8,775 for paving Elm st., \$22,650 for paving Garland st., \$4,915 for sidewalk George st., and \$3,000 for paving city's portion of Waverly ave. paving.

Salem, Ohio.—Contract for paving of Ellsworth ave. to city limits will be let this Fall.

Bay City, Ore.—Citizens have voted to issue \$75,000 paving bonds.

Charleroi, Pa.—Two petitions are being circulated by Donora people, which will be presented to County Commissioners, asking for improvement of road leading from Donora through West Columbia and Eldora to State road leading from Monongahela to Charleroi.

Cresson, Pa.—Cresson Council has voted to issue bonds to amount of \$5,000 for street improvements.

Erie, Pa.—Ordinances have been passed for various street improvements.

Ferndale, Pa.—Citizens will be asked to vote upon bonding borough to limit, at November election, for paving campaign by foot-front method.

Harrisburg, Pa.—Highway Commissioner Bigelow has directed advertising for bids for 17 road contracts. Aggregate is close to 175,000 ft., and includes work on eight main highways. Among them are contracts for completion of main route between Wilkes-Barre and Scranton, aggregating 24,435 ft., and 20,000 ft. in Oakland Township, Susquehanna County.

Meadville, Pa.—Plans for paving of West College st. have been submitted by City Engineer and approved.

Morrisville, Pa.—Ordinance for paving of South Pennsylvania ave. with concrete has been passed by Council.

Pittsburgh, Pa.—Resolutions and ordinances have been passed for various street improvements.

Portage, Pa.—Special election for purpose of voting on \$12,000 bond issue to pay borough's one-third of cost of paving Main st. on foot-front plan resulted in vote of 221 for and only 23 against proposition.

Wilkes-Barre, Pa.—Paving of Bertels lane, from Hanover to Horton st., and Davis place, from terminal to Ross st., will be discussed.

York, Pa.—Purchase of two flushing machines, provided in ordinance passed finally by City Council, will permit cleaning of all paved streets semi-weekly.

Providence, R. I.—Work of laying experimental paving on N. Main st. will be completed in short time.

Sioux Falls, S. D.—Paving of Ninth st. is being discussed.

Chattanooga, Tenn.—New plans have been laid for improvement of Main st. in North Chattanooga. Proposition is to make thorough investigation by engineers and then prepare remedy that will prove permanent.

Chattanooga, Tenn.—Sealed bids will be received until 3 o'clock p. m., on Oct. 9, for 45 coupon paving bonds of city of Chattanooga, for \$1,000 each. T. C. Thompson, Mayor.

Nashville, Tenn.—Bond issue of \$150,000 for streets is being considered.

Corsicana, Tex.—Ordinance ordering election for Oct. 29 has been read for first time providing for issuance of bonds to amount of \$20,000 for street paving purposes.

El Paso, Tex.—City Council has adopted ordinances submitting to people proposition to be voted on for issuance of \$40,000 in bonds for grading suburban streets and extension of water works and sewer system.

El Paso, Tex.—Ordinance authorizing issuance of bonds in sum of \$50,000 to permanently grade streets of city of El Paso not heretofore so graded and to provide for proper drainage of rain water has been adopted at its second reading; also resolution ordering improvement of Roosevelt st. in city of El Paso from its intersection with west line of Putnam st. to its intersection with east line of boulevard; by grading, raising, curbing and paving, has been adopted. Owners of property who petitioned Council to pave Bliss st. from intersection with east line of Piedras st. to its intersection with center line of Stevens st. have been referred to Street and Grades Committee.

Fort Worth, Tex.—Two proposals for paving of Ballinger st., between Pennsylvania and Daggett aves., have been received. The General Constrn. Co.'s bid was \$1.35 per sq. yd., and bid of the Kuhlman & Blue Co. was \$1.40 per sq. yd.

Fort Worth, Tex.—Petition for paving of Clinton ave., between Twentieth and Twenty-fifth sts. has been granted.

San Antonio, Tex.—Ordinance has been referred appropriating \$4,500 for purchase of two flushing machines and six sprinklers to Finance Committee.

San Antonio, Tex.—Ordinance has been passed appropriating \$2,000 for oil-

ing and repairing Garden st., Roosevelt ave. and Eads st.

Salt Lake City, Utah.—City Engineer is working on plans and specifications for paving of Fifth West from Ninth South to city limits. They will be ready within few days.

Alexandria, Va.—Resolutions for improvement of three squares on Washington st. between Duke and Queen sts. with macadam block, so as to obviate necessity of advertising for bids for work, have been passed.

Alexandria, Va.—Two squares on Washington st., between King and Duke sts., will be improved with macadam block.

Smithfield, Va.—Paving of Main st. has been authorized.

Newport News, Va.—According to figures of Girard Chambers, engineer of Elizabeth County, it will cost \$15,624.50 to pave county road between Hampton and Phoebus with vitrified brick and concrete curbing and gutter, and \$17,738.90 if granite curbing is used in work.

Morgantown, W. Va.—County Commissioners have decided upon building five-eighths of a mile of model road extending from end of Stewart st. out to Stewartstown rd.

Aberdeen, Wash.—About nine blocks of bitulithic will be laid at cost of \$45,000.

Everett, Wash.—Provision has been made for improvement of Rockefeller ave. from south line of Hewitt ave. to north line of Pacific ave., by laying of concrete curbs and 6-ft. cement sidewalks. Another ordinance makes ready for improvement of same thoroughfare from Nineteenth st. to south line of Hilton's first addition by laying of cement walks and concrete curbs.

Spokane, Wash.—Paving of Ninth and Tenth aves. and Rockwood boulevard, from Grand boulevard to Hatch st., is being discussed.

Mantowoc, Wis.—Appropriation of \$10,000 for improvement of public highways under new State highway law will be asked of County Board at special session called on Oct. 1.

Milwaukee, Wis.—Bids have been opened by Department of Public Works for new concrete walks at 715 State st. and 67 to 71 Erie st.; for number of brick alleys and for resurfacing of number of streets, among them Auer ave., from Humboldt ave. to North Pierce st., with bituminous macadam.

Melrose, Wis.—Construction of modern highway of stone or concrete from Melrose to Black River Falls is being considered.

Monterey, Mexico.—Parties of business men of San Luisito district of this city are planning paving of principal streets. Crushed rock will be used for foundation and top layer of slag from smelters will make paving durable.

CONTRACTS AWARDED.

Talladega, Ala.—For paving East st., to Southern Asphalt Co. of Birmingham.

Colton, Cal.—For street paving in Colton, to Bryant & Austin, 1650 Compton ave., Los Angeles, as follows: 168,453 sq. ft. of asphalt pavement at 16 cts. per sq. ft., to total \$26,952.48; 18,813 sq. ft. cement concrete gutters at 15 cts. per sq. ft., total \$2,821.95; 948 sq. ft. cement concrete entrances, at 15 cts. per sq. ft., total \$142.20; 369½ lin. ft. of 30-in. by 8-in. 12-gauge corrugated iron culverts, \$1.75 per lin. ft., total \$646.62; 110 lin. ft. 30-in. by 6-in. 12-gauge corrugated iron culverts, \$1.75 per lin. ft., total \$192.50; 54 lin. ft. of 12-in. diameter 14-gauge corrugated iron culverts, \$1.75 per lin. ft., total \$94.50. Total for all work, \$30,850.25. Charles H. Wondries is City Engineer.

Long Beach, Cal.—To White & Gaskill for improvement of Fifteenth st., at 8.4 cts. per sq. ft. for grading and paving; 33.5 cts. per lin. ft. for cement curbs; 23 cts. per sq. ft. for cement gutters; 11 cts. per sq. ft. for cement sidewalks.

Los Angeles, Cal.—By Board of Public Works for following improvements: Albany st., from Ninth to Tenth, to Fairchild-Gilmore-Wilton Co., at 17 cts. a sq. ft. for asphalt paving; 28 cts. a sq. ft. for vitrified block gutter; aggregate, \$3,952.02. Menlo ave., from Thirty-ninth to Leighton, to Fairchild-Gilmore-Wilton Co., at 17.5 cts. a sq. ft. for asphalt paving; 30 cts. a lin. ft. for cement curb; 30 cts. a sq. ft. for vitrified block gutter; 12 cts. a sq. ft. for sidewalk; aggregate, \$4,365. Macy st., from Main st. to the river, to Barber Asphalt Paving Co., at 16.2 cts. a sq. ft. for asphalt paving; 26.1 cts. a sq. ft. for brick paving; 43.6 cts. a sq. ft. for granite block paving;

35 cts. a lin. ft. for cement curb; 16.4 cts. a sq. ft. for asphalt walk; 42.4 cts. a sq. ft. for granite block gutter; 11 cts. a sq. ft. for cement sidewalk; \$792 for culvert on west side of Alameda st.; \$2,300 for storm drain; \$866 for culvert on east side of Alameda st.; aggregate, \$30,421.42. Normandie ave., from Slau-son to Santa Barbara, and other streets, to Peter S. Tomich, at \$27,931.50 for sewer complete. Stephenson ave., from Spence to Indiana, and a portion of Esperanza st., to John Radich, at \$1,850 for sewer complete. Torrence st., from Hobart to Western, to George E. Spain, at \$1.80 a lin. ft. for grading and graveling; 35 cts. a lin. ft. for cement curb; 16 cts. a sq. ft. for cement gutter; 35 cts. a sq. ft. for vitrified block gutter; 11.5 cts. a sq. ft. for sidewalk; aggregate, \$3,559.66.

Oakland, Cal.—For improving Vincente st. to Oakland Paving Co., at following bids: Grading street, including sidewalk (cutting), \$.01¼ per square foot. Grading street, \$.01¼ per square foot. Macadamizing—oil, \$.08¼ per square foot. Curbing—Redwood, \$.12 per lineal foot. Gutters—Broken Rock, \$.12¼ per square foot. Re-setting Broken Rock gutters, \$.10 per square foot, and for improving 20th st. to Ransome-Crummey Co., at following bids: Asphalt pavement, \$.45 per square foot. Earth Grading, nothing per square foot.

Oak Park, Cal.—Resolution has been passed requesting City Commission to accept bid of T. E. Clark for improvement of Thirty-fifth st.

Santa Barbara, Cal.—To Santa Barbara Paving & Grading Co., at \$78,940, for paving 9½ miles of the highway in Permanent Road District of Carpinteria.

Gainesville, Fla.—For paving of number of principal thoroughfares with vitrified brick to Georgia Engineering Co., Augusta, and provides approximately for \$105,000 expenditure in this work.

Jacksonville, Fla.—By City Council for paving 55 blocks of brick to Georgia Engineering Co. at \$1.54 per square yard.

Macon, Ga.—To John H. Lowe Co. to pave Forsyth st. with cement for \$1.34 per sq. yd. Other bid was from Southern Construction & Engineering Co. at \$1.37½.

Bushnell, Ill.—For three blocks of paving on Jackson st., to P. H. Tiernan, of Macomb, Ill., for \$7,475. Galesburg brick will be used.

Dixon, Ill.—By Board of Local Improvements for 15,700 sq. yds. of macadam paving on N. Ottawa ave. and E. McKenney st., to Jas. Devine, of Dixon, for 35 cts. per sq. yd.

Decatur, Ill.—By Board Local Improvements, for paving N. Morgan st. and Forest ave., to S. A. Tuttle, of Decatur, for \$12,510.

Mt. Vernon, Ill.—For paving Eighteenth st., to Jerome Mannen for \$9,450.

Rockford, Ill.—To A. E. Rutledge & Son for brick paving of Harlem ave., at about \$66,000.

Taylorville, Ill.—To John Cherry of Jacksonville, Ill., for paving North Webster, Clay and part of North st., 16,812 sq. yds. vitrified brick, on 6-in. concrete base with asphalt filler at \$1.74 per sq. yd.; alley block 14, brick on 4-in. concrete base, sand filler, at \$1.45 per yd.; 13,625 lin. ft. of combined concrete curb and gutter at \$0.50 per ft. J. S. Michels, City Engineer.

Fort Wayne, Ind.—Grace Construction Co. will pave Fairfield ave. from Organ ave. to Rudisill ave. with asphalt.

Indianapolis, Ind.—For grading streets in Mars Hill, to Costello Bros., Indianapolis contractors. They were the lowest bidders, their price being 21 cts. a cu. yd. This makes total cost of grading in Mars Hill \$36,855.

Logansport, Ind.—For building 8½ miles of stone road at Auburn, to Beal & Bell, of Logansport, at \$26,789.

Richmond, Ind.—By County Commissioners for construction of macadam and brick road from North Tenth st. to Spring Grove to Trippler & Son at \$32,000.

Clinton, Ia.—By Council to Thos. Carey & Son contract for paving Fourth ave. from First st. to river.

Columbus, Kans.—By City Council to J. R. Ramsey, Toneka, Kans., at \$16,771.45, for approximately 9,265 square yards Sarcolithic pavement on concrete foundation, excavation about 1,570 cubic yards, two catch basins and 2,650 concrete curb and gutter.

Lake Charles, La.—For construction of approximately 5 miles of cement sidewalks, by City Council, to General Paving Co., of Shreveport, at 85 cts. per lin. ft.

New Iberia, La.—By Board of Supervisors to Chatham Construction Co. for 7,000 feet of paving on Main st., beginning at post office and extending to southern limit, so as to connect with model road to Jeanerette.

Manchester, Mass.—By Park Commissioners for construction of road and improvement of grounds at Masconomo Park, to Semons & Littlefield, for \$2,849.13. Other bidders were Morley, Flattery & Co., \$2,850; S. A. Sinnicks, \$3,673.

Owosso, Mich.—To Andrew Geeck, for repaving of West Main st., between Michigan Central Railway tracks, at price slightly over \$17,000.

Albert Lea, Minn.—By City Council to A. L. Construction Co., at \$7,592.46, for 11,922.45 feet of concrete curbs.

Duluth, Minn.—To George R. King, for paving of Twenty-seventh ave. West, between Michigan st. and Fifth st., being low on all propositions. Cost of pavement will depend upon material selected. Bids range from \$15,772 for plain macadam to \$19,446 for bituminous concrete. Also, to George R. King, for construction of temporary road along Greysolon rd., between Thirtieth and Thirty-second aves. east to connection with Jefferson st. His bid was \$1,411.10.

Sedalia, Mo.—By Sedalia Special Road District, for road work as follows: To Ransom & Cook for Bronkhurst, Beamanworth, McFarland and Petty Lane rd., all rock roads, 6½ miles, at \$1.48 to \$1.84 per yd.; for Camp Branch rd., 1 mile gravel, to J. H. English, \$1.40 per yd.; Maplewood rd., rock, to Lee Carpenter, \$1.73 per yd.; Fisher Lake rd., 3 miles, rock, to W. W. Wheeler, \$1.75 per yd.; Cotton rd., 1 mile, rock, to Contractor Burford, \$1.40 per yd., and Southwest rd., 3½ miles, gravel, to J. M. Green, \$1.23½ per yd.

St. Louis, Mo.—By Board Public Improvements for paving as follows: Eyermann Constrn. Co., Odd Fellows Building, with brick on Alaska st., \$21,611; with telford on Minnesota st., \$23,808; with wood block on Olive st., \$6,093; to Skrainka Constrn. Co., Security Building, with brick, on Ninth st., \$36,451, and brick on Margaretta st., \$6,182; to Trinidad Asphalt Mfg. Co., with asphalt on Terry st., \$18,333, and on Norwood st., \$6,593; to Ruecking Constrn. Co., 4036 Marine ave., with telford on Arkansas st., \$7,410, and to Perkinson Bros. Constrn. Co., 3237 Carter ave., with wood on Fair st., at \$17,330.

Butte, Mont.—Paving Committee has recommended that Robert Metcalf be awarded contract for macadamizing Quartz and Alaska sts., as he was lowest bidder.

Newark, N. J.—To Newark Paving Co., at \$7,107.75, for the paving of Fourth st., between Park and Sixth aves., with brick, and McMahon Construction Co. will receive \$3,086.50 for paving of Gold st., between Blum and Jacob sts., also with brick.

Paterson, N. J.—Bids have been received by board on Valley road project and have been referred to County Engineer Ferguson, who will ascertain lowest proposal. Lump sum bids and proposals per lineal foot were received. Francisco Bros. propose to improve Valley road with Brackett compound for \$74,513.73, and with amiesite for \$70,347.43. Osborne-Marsellis Co. propose to improve road with Brackett compound for \$76,504.28 and with amiesite for \$72,716.73. George F. Brackett was lowest bidder, in lump sum, and offered to do work for \$68,886.42.

Newburgh, N. Y.—For paving of Broadway between Mill and West sts., to Warren Bros. Co. of Boston, Mass. Material is to be bitulithic such as now covers same wide thoroughfare from Liberty st. west to Mill, and curbs are to be of concrete heavily reinforced. Total cost of work, according to contract awarded by City Council, will be \$67,432.10. Bids were as follows: Jova & Kehoe, Inc., Toronto-American-Porter or Mack block, with plain curb, \$68,032.40; same with reinforced curb, \$68,987.90; Pennsylvania clay block with plain curb, \$66,797.40; same with reinforced curb, \$67,752.90. Warren Bros. Co., bitulithic with plain curb, \$66,667.70; same with reinforced curb (heavy), \$67,432.10; same with reinforced curb (light), \$67,241.

Rye, N. Y.—To Hastings Pavement Co., for paving Purchase st., at \$25,335.15; to Frank E. Murray Constrn. Co., for Apawamis ave., \$4,173.55, and Railroad ave., \$7,062; to Daly & Merritt, for Cedar st., at \$2,870, and to the Billington Contracting Co., for Rye Beach ave., \$3,879, and Highland rd., \$3,238.50.

Schenectady, N. Y.—To Bruno Timpoly, contractor of this city, for laying of concrete sidewalks in Elder and Schenectady sts. The bidders' figures were as follows: D. Lewis, 9% cts. a sq. ft.; P. H. Zink, 12½ cts.; Bruno Timpoly, 9½ cts.; Cook & Ripley, 12½ cts.

Syracuse, N. Y.—Bids have been submitted on three paving jobs and two resurfacing contracts. On pavement of Tennyson ave. from Milton ave. to Avery ave. Guy B. Dickinson was low on asphalt specifications with bid of \$10,664.90 and low on brick or block pavement with \$10,429. F. J. Baker was low on both asphalt and brick bids for paving of Beverley road from Crossett st. to Stolp ave. His bid for asphalt was \$7,644.20 and for brick, \$7,412.20. On paving of Madison st. from University ave. to Irving st. Guy B. Dickinson was low on both sets of specifications. His bid for vitrified brick was \$8,104.25 and for asphalt, \$7,326.25. The Warner-Quinlan Co. had no opposition on resurfacing of Tracy st. from Plum to North West st., their figure being \$2,383.16. Same company was low on contract for resurfacing E. Willow st. from N. State to Townsend and Townsend from E. Willow to James st. Bid was \$3,403. Board awarded contract for furnishing elevating grader and wagon for loader for use in park grading work to Austin Western Co. The price was \$1,130. Warner-Quinlan Company was awarded contract for resurfacing of South Geddes st. from West Fayette to Elliott st., exclusive of the railroad strips. The price was \$18,356. C. T. Hookway Construction Co. was awarded contract for paving of Tennyson ave. with vitrified brick and stone curbing from S. Wilbur ave. to Milton ave. Figure was \$15,656. Same company took contract for paving Milton st. from Chemung st. to the city line, Chemung st. from Milton ave. to Emerson ave. and Emerson ave. from Chemung st. to Harbor st. Price was \$33,641.50. Bids were received for grading Livingston ave. from Euclid ave. to Stratford st. Albert Gaffey was low with figure of \$1,132.25. Same contractor was low with bid of \$1,368 for grading Herkimer st. from Willis ave. to Avery ave. He was low also with bid of \$925 for grading Cayuga st. from Avery ave. to Milton ave.

Utica, N. Y.—By Board of Contract and Supply, for construction of eight-foot concrete arch culvert, to Harry W. Roberts Co. for \$4,912.50.

Fargo, N. D.—For paving 200 ft. on Seventh ave., south, to James Kennedy.

Columbus, O.—By State Highway Department, for grading and paving with waterbound macadam, Sec. No. 1, the Marysville and Marion road. State Highway "A" Pet. No. 625 in Clairbourn Township. Length, 12,730 ft. or 2.41 miles; to L. L. Allen & J. W. Scott, Marion, O., at \$11,420. For grading and paving with gravel macadam, the Dayton and Springfield road. State Highway "G" Pet. No. 529, in Bath Township. Length, 10,663 ft. or 2.02 miles; to Korah E. Kunkle, Dayton, O., at \$6,446. For grading and paving with waterbound macadam, the Warren Meadville road State Highway "C" Pet. No. 478, in Johnston Township. Length, 18,500 ft. or 3.50 miles; to Seiple & Wolf, Toledo, O., at \$21,990.43. James R. Marker, State Highway Commissioner.

Dayton, O.—Board of Control will have to readvertise for bids on five sidewalk contracts. John Kirschner was awarded 17 contracts for sidewalk improvements. A. J. Kramer was given eight contracts, and H. G. Helmig was given three contracts.

Marysville, Ohio.—The State Highway Department to L. L. Allen and J. W. Scott, Marion, Ohio, at \$11,420 for grading and paving Section 1 of Marysville and Marion road, in Union county.

Portland, Ore.—Council has awarded contracts for two large street improvement projects in Westover terrace. Both are for laying concrete curbs and sidewalks and concrete pavement, and were awarded to Archie Mason. The Macleay bldg. job amounts to \$105,782, and Kingston ave. contract, \$83,912.

Port Allegany, Pa.—To John Sheehan, of Bradford, for paving two streets at Port Allegany, at \$18,244.13.

Portage, Pa.—For paving Main st., by Portage Council to Anstead, Shirk & Co., of Gallitzin, on bid of \$2.29 per sq. yd.

Taylor, Tex.—For paving with creosoted blocks in concrete, to Ocklander Bros., of Waco, for about \$75,000.

Salt Lake City, Utah.—To McKay & Reed, for constructing sidewalks in Salt Lake City at \$10,225.

Salt Lake City, Utah.—Probably the lowest bid ever received by Salt Lake on asphaltum for paving work was received when G. A. Heman, St. Louis contractor, submitted bid for \$1.77 a sq. yd. on rock asphalt for paving Second South st., from Tenth East to Twelfth East.

Corpus Christi, Tex.—City Council has formally approved construction and maintenance bond of Texas Bitulithic Co., which won out over all competitors recently in matter of paving 150 city blocks. Street paving here will be laid on 28 streets, as a starter, city to pay one-fourth of cost on all streets and all intersections. For this purpose sum of \$140,000 has been laid aside.

Mechen, W. Va.—By City Council for paving of north side of Sixth st. to Ward & Patrick, of Steubenville.

Goldendale, Wash.—By Council for paving 10 blocks in residence district, in addition to work now under way, to J. F. Hill Paving Co., of Chicago. Hill Co.'s bid for work was \$21,891.10, storm sewers and curbing included, against \$22,093.01, proposal of Jeffery & Bufon, of Portland, only other bidders. Hill Co. agrees to complete work by Dec. 1 and take 10-year improvement bonds, bearing 7 per cent. interest. Pavement will be 24 feet wide with parking strips on the sides.

Spokane, Wash.—By City Council for paving Washington st., Havermale ave. to Great Northern viaduct, estimate \$1,600, to Mitchell Bros. at \$1,787. Paving alley, between Howard and Stevens, from Front ave. to the alley between Front and Main aves., estimate \$400, to Inland Empire Hassam Paving Co. for standard concrete at \$400. Grading, curbing and sidewalk paving Thirty-third ave., Lamonte to Tekoa st., estimate \$1,680, to J. E. Mitchell at \$1,757.

C. M. Payne got more of contracts than any other single contractor, and got them all on bids lower than estimate. His share of awards was: Grading, curbing and constructing a drain on Fourth ave., C to F st., estimate \$1,900, bid price \$1,790. Grading and curbing Fairview ave., Belt st. to Northwest boulevard, estimate \$2,500, bid price \$2,240. Grading, curbing and parking Howard st., Wabash to Garland ave., estimate \$5,500, bid price, \$4,395.

SEWERAGE

Los Angeles, Cal.—Plans have been made for construction of sewers in various streets.

Boulder, Colo.—City Engineer has been authorized to have necessary surveys made for beginning of storm sewer on Twelfth st.

Indianapolis, Ind.—Plans for local sewers in Bradbury st., from Shelby st. to State ave., and in La Salle st., from Glen drive to first alley north of Twenty-fifth st., have been prepared by City Engineering Department. Bradbury st. sewer will be of pipe, ranging from 12 to 24 inches in diameter, and estimated cost \$11,600. La Salle st. sewer will be of pipe, ranging from 12 to 20 inches in diameter, and estimated cost is \$6,200.

Indianapolis, Ind.—Resolutions have been adopted for sewers in various streets.

Burlington, Ia.—Resolution has been adopted for construction of 8-inch vitrified pipe sewer from present sewer in Alley No. 8, north of Oak st. to center of Oak and Ash sts.

Fort Dodge, Ia.—C. H. Reynolds, City Engineer, has recommended acceptance of three sanitary sewers constructed in southeast part of city, and one in West Fort Dodge.

Lexington, Ky.—Question of sewage-disposal tank will be voted on this fall.

Baltimore, Md.—Chief Engineer Hendrick has declared that another sewerage loan will be necessary after completion of original plans of Sewerage Commission, if local system is to keep in step with recent rapid growth of city.

Atlantic City, N. J.—Plan to extend drainage laterals over to Pacific ave. has been practically determined upon. General plan is to expend \$100,000 for building of laterals over to Pacific ave. on such avenues as are at time being most in need of paving, so that ducts can be completed before paving is started.

Newtown, L. I., N. Y.—Petitions have been approved for sewers in following streets: Clinton ave., Maspeth, from Maurice ave. to Mueller st.; Perry ave., from Maurice ave. to Mueller st., \$12,700; in Pottes ave., Long Island City,

from Laurence st. to Second ave., \$600; in Dittmars ave., Astoria, from East River to Crescent st., \$6,000, and receiving basins on Washington ave., on northwest corner of Seventh and Eighth st., \$300, and northeast corner of Willow and North William sts., \$225, both in Long Island City, and on Myrtle ave., Glendale, northeast corner of Lafayette ave. and Tompkins place, \$585.

Oneida, N. Y.—Proposed Leonard st. sewer, approved by Board of Public Works, has been authorized by Common Council.

Oneida, N. Y.—Board of Public Works has authorized extension of Lake st. sewer from Almand to Verona st.

Perth Amboy, N. J.—Ordinance has been passed to lay 15-inch pipe sewer with house connections in Elm st. between Market and Smith sts.

Girard, O.—Bids for proposed sewer- ing of Broadway hollow and natural waterway through Jones-Stotler, Hauser and Hartzell properties are being discussed by Council. The solons thought that bids were far too high and matter was referred back to Sewer Committee and engineer. Bid of Kennedy Bros. was \$7,011.75, and that of Turner & Olson was \$6,489. Figures are fully third higher than engineer's estimate.

Salem, O.—Construction of storm water sewer system is being considered.

Portland, Ore.—City Engineer Hurlburt has practically completed plans for intercepting sewer on either Front or Fourth sts., from Marquam Gulch to a point near city limits. All east and west sewers intersecting immense sewer will drain into it, and in this manner sewage, which is now emptied into center of harbor, will be carried below city. It is estimated sewer will cost \$500,000.

Altoona, Pa.—Mayor S. H. Walker has approved resolution passed by Councils authorizing Department of Public Works to engage services of George W. Fuller to prepare plans and specifications for proposed outfall and sewerage disposal plant for eastern part of city.

Erie, Pa.—Ordinance has been passed directing City Engineer to advertise for proposals for storm water drain sewer in Walnut st., from bay to Fourth st., and in Second st., from Walnut st. to Chestnut.

Scranton, Pa.—Preliminary plans for construction of sewage disposal plant at Hillside Home, in Clark's Summit, will be prepared by representative of Philadelphia sanitary engineering firm of Albright & Medus.

Edgewood, R. I.—Installation of sewer system is being considered.

Sioux Falls, S. D.—Construction of sewers in various streets has been authorized.

Dallas, Tex.—Plans for sewage disposal plant have been prepared by C. G. Williams of New York.

El Paso, Tex.—City Council has adopted ordinances submitting to people proposition to be voted on for issuance of \$400,000 in bonds for extension of sewer system and water works, and for grading suburban streets.

El Paso, Tex.—Council has adopted ordinance for bonds in sum of \$150,000 at its second reading, which authorizes issuance of bonds to acquire and lay permanent sanitary sewers. Bond election in ordinance is called for Oct. 29, 1912. Property owners have petitioned Council to install sewerage system in block 3 of East El Paso addition, and it has been referred to Sanitary Committee.

San Antonio, Tex.—Measure has been passed authorizing construction of sewers on S. Olive st. and E. Quincy st.

Racine, Wis.—Resolution has been passed favoring submission to vote of people in November question of issuing bonds in sum of \$185,000 for three trunk sewers.

CONTRACTS AWARDED.

Ozark, Ala.—To J. B. McCrary Co., of Atlanta, Ga., for sewer system to be constructed at a cost of \$15,000.

Klamath, Cal.—By Interior Department, to Maney Bros. & Co., of Boise, the contract for construction of second unit of laterals of Klamath project. Contract involves excavation of 300,000 yds. of earth. Price is \$67,212.

Oakland, Cal.—For construction of sewer on East Twelfth st. to John Sorenson, at following bids: Furnishing and laying 6-inch pipe, at \$.75 per lineal foot. Furnishing and laying 5-inch "Y" branches, nothing. Lampholes, \$12 each. Also for sewers in various other streets to Bates, Borland & Ayer, at following bids:

Per lineal foot of 8-inch pipe sewer, complete, \$.63. Per lineal foot of 10-inch pipe sewer, complete, \$.83. Per lineal foot of 12-inch pipe sewer, complete, \$1.31. Per lineal foot of 14-inch pipe sewer, complete, \$1.15. Per lineal foot of 16-inch pipe sewer, complete, \$1.44. Per lineal foot of 21-inch pipe sewer, complete, \$2.91. Per brick manhole, complete, \$40. Per lamphole, complete, \$10. Per drop connection, complete, \$4. Per "Y" branch on 8-inch pipe sewer, \$.55. Per "Y" branch on 10-inch pipe sewer, \$.70. Per "Y" branch on 12-inch pipe sewer, \$1. Per "Y" branch on 14-inch pipe sewer, \$1.35. Per "Y" branch on 16-inch pipe sewer, \$1.35. Per "Y" branch on 21-inch pipe sewer, \$1.75. Frank R. Thompson, City Clerk.

Hartford, Conn.—By Board Contract and Supply, for constructing sewers and Berardino Silvestri, of Hartford, secured contract, at \$8,285, for sewer in Bloomfield ave., and John Dinallo, at \$3,641, for sewer in Milford st. R. R. Clark is City Engineer.

Elgin, Ill.—By Board of Local Improvement to Logan & Giertz, for W. Chicago st. sewer.

Fort Dodge, Ia.—To Claus A. Kling, by City Council, for sanitary sewers to be put in, commencing at Nineteenth st. and Fifth ave. south and at Ave. C and G st. Joseph Benson was other bidder.

Harper, Kans.—For construction of sanitary sewer system to Bash & Gray, Joplin, Mo. Bids are as follows: (a) general contract (b) disposal plant. Heaney Const. Co., Enid, Okla. (a) \$17,240.80; (b) \$6,523.40. Hall Const. Co., Wichita, Kans. (a) \$14,938.95; (b) \$6,004.05. Wm. F. Plummer & Co., Springfield, Mo. (a) \$17,565.25; (b) \$6,533.80. Bash & Gray (a) \$16,671.60; (b) \$5,353.90. A. J. Foster, Joplin, Mo. (a) \$17,637.85; (b) \$7,184.05. Miller & Reed, Clay Center, Kans. (a) \$16,939.10; (b) \$5,815.40. McElvain & Ramsey, McPherson, Kans. (a) \$16,383.96; (b) \$6,156.35. W. M. & R. J. Boyd Const. Co., Kansas City, Kans. (a) \$18,287.80; (b) \$7,947.85. Connelly Const. Co., El Reno, Okla. (a) \$17,198.75; (b) \$6,330.47. J. O. Peingle, Carthage, Mo. (a) \$16,755.50; (b) \$6,192.05. Burns & McDonnell, Engrs., Kansas City, Mo.

Duluth, Minn.—Adam McAdam's bid of \$1,967.84 was low for sanitary sewer in Grand ave., between Forty-sixth and Forty-ninth aves. west. Joseph Ferrier was low on sanitary sewers between Eighth and Tenth sts. and Twenty-third and Twenty-fifth aves. His bid was \$2,907.25. Same contractor was low on sewer in Seventh alley, between Twenty-first and Twenty-second aves., his bid being \$333.90.

St. Paul, Minn.—Board of Public Works has accepted following bids on sewer contracts: O'Neill & Preston, \$1,525, sewer on Lombard ave.; P. J. Ryan, \$773, sewer on State st. from Florida to Utah; P. J. Ryan, \$2,343, sewer on Sherburne ave. from Griggs st. to Hamline ave.; O'Neill & Preston, \$1,884, sewer on Tatum ave. from Chelton to Talula ave.

Baltimore, Md.—By Board of Awards to James Ferry & Sons for Sewerage Commission Contract No. 98 at \$39,846.75. Next lowest bidder was Ryan & Reilly, at \$40,199.25. William McCarthy was low bidder for Sewerage Contract No. 99. His bid was \$31,358; that of James Ferry & Sons, the next lowest, \$35,512.

Baltimore, Md.—B. F. Sweeten & Sons have submitted lowest bid for construction of storm water drains, but, on account of their failure to sign at bottom of bid, contract has not yet been awarded.

Hermann, Mo.—For construction of sewer to Tonkawa Const. Co., Tonkawa, Okla., at \$4,907.70. Other bids as follows: O'Neill Const. Co., Leavenworth, Kans., at \$5,035; Fardwell & Bristol, St. Louis, Mo., at \$5,320; Columbia Paving Co., Columbia, Mo., at \$5,484. Burns & McDonnell, Kansas City, Mo., Engrs.

Lewistown, Mont.—To Lindstrum & Oren, of Butte, for construction of storm sewers in business district, their bid being \$12,755.

Cranford, N. J.—By Township Committee for new sewer in North ave., east to W. J. McCloud Co., of Elizabeth, for sum of \$5,020.15. Other bids received for work were, T. Foster Callahan, \$5,713.95, and Louis Jaques \$9,248.50.

Avon, N. Y.—For construction of new sewage disposal plant, to Mr. Bonn, of Syracuse.

Oswego, N. Y.—For construction of temporary Normal School sewer to Robert M. Barnett. Sewer is to cost approximately \$4,000.

Utica, N. Y.—For laying of sewers in Mathews ave., to F. M. Johnston for \$339.20. Other bidders were Martin McManus, \$411.50; Jeremiah Augar, \$432.25, and A. W. Fitch, \$360. F. M. Johnston was awarded contract for construction of sewers in Churchill ave. for \$794.10. Other bidders were Martin McManus, \$911; Jeremiah Augar, \$996.75, and A. W. Fitch, \$921.75.

Winston-Salem, N. C.—For construction of East Winston sewer system at cost of \$15,000, by committee from Board of Aldermen to B. McCreary, of Atlanta, he having submitted lowest of four bids that were in hand. The highest bid was \$18,000. It is calculated that between four and five miles of sewer mains will be laid in this section.

East Youngstown, Ohio.—By Council for completing works on Wilson ave. sewer to firm of Sause & McCarthy, for \$22,620.75. Sherman DeGroodt's bid, \$21,811.40, and Joseph Hannon, \$32,746.50.

Piqua, O.—By Director Public Service, for constructing sanitary sewer on N. Chestnut, S. Chestnut and South ave., in all 3,750 lin. ft., and for 13,750 sq. yds. paving on E. High st., to J. M. Hennessey & Bro., of Piqua.

Eugene, Ore.—For 3½ miles of combination storm and sanitary sewer, to Jas. Kennedy, of Fargo, N. D., for \$158,603.

Hazleton, Pa.—Bids have been opened for construction of sewers on Fourth st., North Broad st. and Oak st., with lateral connections. Bids as follows: James Correll, \$12,153.92, with concrete inlets and manholes; \$12,073.92, with stone inlets and manholes. Arlo Ruth, \$12,130.30, for either concrete or stone inlet and manholes. Ludwig Kramer, \$12,003.43, with concrete inlets and manholes; \$11,943.43, with stone inlets and manholes. Contract was awarded to Mr. Kramer for concrete job.

Pittsburgh, Pa.—But one bidder submitted estimate for construction of Thirty-third st. basin relief sewer, for which \$125,000 was provided in 1910 bond issue. This was John F. Casey Co. Casey submitted two figures, one for brick sewer and other for concrete.

York, Pa.—Bids have been opened and contracts awarded by Board of Public Works, for furnishing materials and constructing a number of sanitary sewers. Bids for 8-in. terra cotta sewer on West Market st., between West and Hartley st., were: General Supply & Construction Co., 70 cts. per ft.; A. B. Kraft, 98 cts. per ft. Contract was awarded to General Supply & Construction Co. Bids for North Queen st. laterals were: General Supply & Construction Co., 5-in., 49 cts. per ft.; double Y's, 45 cts.; ½ bend, 30 cts.; A. B. Kraft, 5-in., 85 cts. per ft.; double Y's, 70 cts.; ½ bend, 70 cts. The contract was awarded to General Supply & Construction Co. Contract for raising manholes along Codorus creek, between Richland ave. and College ave., were awarded to A. B. Kraft. Bids for this work were: General Supply & Construction Co., \$2.75 and \$3.25; A. B. Kraft, \$2 and \$3. Lower bid was in each case for merely raising the manhole and higher for raising and back filling.

Norfolk, Va.—Perry W. Ruth & Co., Inc., was lowest bidder on contract for laying two storm water concrete drains in Ninth ward, with bid of \$19,037.50. Other bidders were Lewis Lawson, \$20,015; J. F. McGuire, \$20,647; Guild & Co., \$20,331.

Contract calls for laying drain along route of old Whitehead pond, extending about 1,400 feet, and on Goff st., along Elmwood cemetery wall, for distance of 1,900 feet.

Huntington, W. Va.—By City Commissioners, for following sewers: Lon Cummins, sewer, between 5th and 6th aves., west to 1st st., \$1.15 per lin. ft., \$25 for manholes; sewer, alley between Primrose and 8th aves. and Pearl and 14th sts., 73 cts. per lin. ft.; sewer, 7th ave., between 15th st. and Buffington line, \$1.15, \$25 for manholes. Amos Trainer, sewer, alley between 9th and 10th aves. and 7th and 2nd sts., \$1.45 per lin. ft.; \$30 for manholes; sewer, alley between 10th and 11th aves., \$1.35, and \$30 for manholes. L. J. Gillespie, sewer, alley between 8th and 9th aves. and 7th and 2nd sts., \$1.49 per lin. ft., \$35 for manholes; sewer, south of C. & O. Ry., between 5th and 7th sts., \$2.15 per lin. ft., \$35 for manholes.

Seattle, Wash.—By Board of Public Works for construction of North Trunk sewer in central district to Meacham & Babcock at \$368,268.50.

Spokane, Wash.—By City Council to DeCamp & Cheatham, low bidders at \$13,601, for construction of Fourth Ward Sub-trunk Sewer No. 48. Estimate was \$14,770.

WATER SUPPLY

Pasadena, Cal.—New bids have been asked for water bonds in sum of \$1,250,000.

San Diego, Cal.—People of San Diego have voted recently to purchase large portion of Southern California Mountain Water Co.'s plant for \$2,500,000, and to lease plants of system for ten years at annual rental of \$67,500, with option to purchase at \$1,500,000.

San Francisco, Cal.—Spring Valley Water Co. has turned down offer of city and county of San Francisco to purchase its properties for \$33,500,000. In refusing this offer water company has presented new proposition to municipality, offering to sell its properties to city, with exception of Lake Merced and 550 acres surrounding it, for \$38,500,000.

Tulare, Cal.—Three bond issues have been ratified by people of Tulare when they approved that of \$100,000 for purchase or acquisition by construction of city water system; issue of \$8,000 for purchase of two fire-fighting apparatus, and issue of \$2,000 for fire alarm telegraph system.

Macon, Ga.—Walter Dannenberg has been awarded \$25,000 worth of waterworks bonds.

Dunlap, Ia.—At election held here on question of issuing bonds for \$8,000 for waterworks extension, 152 votes were cast for, and 14 against the proposition.

Redfield, Ia.—Town will vote on \$15,000 bonds for waterworks and electric lighting.

Burlingame, Kan.—Burlingame in special election is to vote on proposed system of water works on October 10. Plan as accepted is to build concrete dam across Dragon Creek two miles south of town and provide for pumping of water to this city. Bond issue calls for \$56,000 for water works, sewerage proposition of \$12,000 to follow later.

Lancaster, Ky.—Water works improvements for which \$12,000 bonds were voted at last November election will begin at once. Charles M. Crawford, of Lexington, an engineer, is engaged in work preliminary to letting of contracts.

Vicksburg, Miss.—City Committee has decided to recommend to City Council that it call election to allow people to vote upon proposition whether they are willing to pay \$347,500 for local water plant, company having agreed to sell at this price.

Austin, Minn.—Water Board will lay 5,500 feet of water mains, to cost about \$4,000.

Brookport, N. Y.—Proposition of installing water supply is being considered.

Irondequoit, N. Y.—Petition has been received asking for installation of water mains in town.

Locke, N. Y.—Bids received for water works construction have been rejected. Charles A. Bowman, Morrison & Farrington, Inc., engineers, Syracuse, N. Y.

Akron, O.—First installment of new water works improvement bonds, amounting to \$128,000, have been sold by Auditor James McCausland to Cleveland Trust Co., which offers a premium of \$2,905.60.

Akron, O.—Installation of water meters is advocated.

Gibsonburg, O.—Sealed bids for bonds in sum of \$1,500 for improvement of Gibsonburg water works system have been opened. Three bids were received, as follows: Colonial Bank, Fremont, \$1,529; Stacy & Braun, Toledo, \$1,450; Gibsonburg Banking Co., \$1,520. Council has accepted bid of Colonial Bank.

Hamilton, Ohio.—Appropriation of \$5,000 has been asked for new supply basin.

Youngstown, O.—City will sell \$300,000 bonds, for which sealed bids will be received, to be opened at 2 o'clock p. m. Monday, October 21, 1912, at office of City Auditor, West Boardman st., to pay for erecting, extending, enlarging, improving, furnishing, equipping and securing a more complete water works system. D. J. Jones, City Auditor.

Beaverton, Ore.—City is contemplating the construction of water system.

El Paso, Tex.—Council has approved ordinance authorizing issuance of bonds for purpose of providing improvements for waterworks of city of El Paso in the sum of \$200,000.

El Paso, Tex.—City Council has adopted ordinances submitting to people

proposition to be voted on for issuance of \$400,000 in bonds for extension of water works and sewer system and grading and draining of suburban streets.

Lonsdale, Tenn.—Lonsdale City Council will shortly meet, and it is expected it will pass on third and final reading of the water ordinance, which provides for six additional fire plugs and 3,000 feet extension of water mains in Lonsdale. This extension will give citizens additional water supply and better protection against fire.

Morgantown, W. Va.—It is estimated that municipal water plant will cost about \$199,978.

Burlington, Wis.—Village of Waterford has voted to issue \$15,000 in bonds for water works system.

Waterford, Wis.—Village has decided to install waterworks system. Estimated cost, \$15,000.

CONTRACTS AWARDED.

Faunsdale, Ala.—By Town Council to Southern Engine and Boiler Works of Jackson, Tenn., for new boiler for water works plant.

Bellwood, Ill.—By Village Board Trustees as follows: For constructing a 60,000-gal. steel tank and tower, to Chicago Bridge & Iron Co., Chicago, Ill., \$4,980; a 35 h.-p. oil or electrical motor and pump to American Well Works, for \$3,600.

Mishawaka, Ind.—For constructing water works, to Wm. Rosewarne, for \$10,500, and to the Platt Iron Works, of Dayton, O., for pumps, at \$10,000.

South Bend, Ind.—By Board of Public Works to Platte Iron Works, Dayton, Ohio, for furnishing one 4,000,000-gallon high duty pump at \$9,700.

South Bend, Ind.—Council has passed under suspension of rules ordinance containing agreement between Board of Public Works and Galvin H. Defreese for contract of building 6,000,000-gallon reservoir of Water Department in Leeper Park. Contract price is \$51,676.40.

Blanchard, Ia.—For construction of water works system in Blanchard, to Des Moines Bridge & Iron Co., at \$7,610.

Fort Dodge, Ia.—To Zitterell & Sullivan, of Webster City, Ia., for a 2,000,000 gallon reservoir, at \$24,307. Other bids as follows: Tanner Bros., Webster, S. D., \$26,939; W. D. Lovell, Minneapolis, \$28,700; C. C. Nagaard, Council Bluffs, \$34,155; Des Moines Bridge & Iron Works, \$29,714; Blackhawk Co., \$35,385, without excavation; Chamber & Dobson, New Hampton, Ia., \$26,500; J. W. Turner Improvement Co., Des Moines, \$34,500; Midland Bridge Co., Kansas City, \$44,275.

Frankfort, Ky.—For constructing filter plant, to the Pittsburgh Filter Mfg. Co., Pittsburgh, Pa., at \$80,000.

Shreveport, La.—For installing water system at Fair Grounds, as follows: Memphis Steel Construction Co., Memphis, Tenn., constructing 100,000-gallon tank at \$3,900; American Cast Iron Pipe Co., Birmingham, Ala., 4,500 ft. of 6-in. pipe, \$27 per ton; W. K. Henderson Iron Works, Shreveport, 15 hydrants, at \$15 each.

Holyoke, Mass.—By Board of Public Works, to Samuel Snell, for 800 ft. of 15-in. pipe at price to be 72 per cent. discount off of list price, and of Sullivan & Carmody, for 1,100 ft. of 12-in. pipe at same price discount as Mr. Snell's.

Russell, Mass.—By Board of Water Commissioners, to Warren Foundry & Machine Co., of New York, for furnishing about 260 tons of 4-in. cast-iron pipe and specials at \$26.25 per ton.

Russell, Mass.—By Board of Water Commissioners, for laying 13,000 ft. and 12,000 ft. of c.-i. pipe, to A. Williams & Co., 3 Cotting st., Boston. James L. Tighe, 189 High st., Holyoke, is Engr.

Hermann, Mo.—For construction of waterworks as follows: General construction to Tonkawa Const. Co., Tonkawa, Okla., at \$27,670. Other bids as follows: O'Neill Const. Co., Leavenworth, Kans., \$27,225; Fardwell & Bristol, St. Louis, Mo., \$31,000. For pumping machinery, to Henry R. Worthington, at \$1,585. Other bids as follows: Reeves & Skinner, St. Louis, Mo., \$2,010; E. J. Merkle, Kansas City, Mo., \$1,850. For internal combustion engine, to Otto Gas Engine Works, at \$1,894. For mechanical filter, to Roberts F. Mfg. Co., Darby, Pa., at \$3,100. Burns & McDonnell, Kansas City, Mo., Engrs.

Perth Amboy, N. J.—To John Quinlan, for carting and laying pipe of varied sizes in southerly leg of water system. Bid as follows: Pipe, 55 cts. a lin. ft.;

creosoted yellow pine, \$53 per thousand board feet; excavation, 30 cts. a cu. yd. Other bids follow: American Aerator Co., of Camden, pipe, 75 cts. a ft.; creosoted yellow pine, \$55 a thousand feet; excavation, 23 cts. a cu. yd. H. H. Holmes, of Jersey City, pipe, 65 cts. a ft.; creosoted yellow pine, \$60 a thousand feet; excavation, 40 cts. a cu. yd. Liddle & Pfeiffer, of this city, pipe, 80 cts. a ft.; creosoted yellow pine, \$60 a thousand board feet; excavation, 25 cts. a cu. yd.

Dayton, O.—By Board of Control, for construction of conduit in connection with proposed extension of water works system, extending from water works station to site of the new wells, distance of approximately two miles. Contracts involve \$100,576.90 and were let in parts as follows: Cast-iron pipe and specials, to the United States Cast Iron Pipe & Foundry Co., of Chicago, \$65,897.30; valves, Rennsaeiler Valve Co., Troy, N. Y., \$2,788.80; lead and jute, James B. Clow & Sons, Trenton, N. J., \$3,889; delivering and installing pipe and accessories, constructing the valve chambers and concrete foundation work, Pitt Construction Co., Pittsburgh, Pa., \$25,501.80; furnishing and erecting the steel standpipe, Chicago Bridge & Iron Works, Chicago.

Springfield, O.—For furnishing cast-iron pipe, to U. S. Cast Iron Pipe & Foundry Co., at \$3,238.

Youngstown, O.—William P. Hannon, representing General Fireproofing Co., of this city, for furnishing nearly 1,000,000 pounds of reinforced steel, to be used in construction of new filter plant addition by Lightbody & Henderson, general contractors.

Youngstown, O.—To Chicago Bridge & Iron Works, for new South Side standpipe. This company bid \$35,960 for metal work of structure.

Youngstown, O.—To William Henderson, of this city, for big improvements at filter plant. His bid of \$124,890 was low.

Oakville, Wash.—To Erickson Brothers, of Seattle, for construction of new municipal water plant here. They estimate plant will be completed in about sixty days. New water system when completed will cost about \$11,000.

Appleton, Wis.—For water works improvements, to following: Ludlow Mfg. Co., all hydrants, valves, etc., \$4,100.50; U. S. Cast Iron Pipe & Foundry Co., all cast iron pipe, \$2,625 for 4-in. pipe, and \$2,500 for all other; J. B. Clow & Sons, all special castings, 2½ cts. per pound; pig lead, \$4.80 per 100 pounds; hemp, 4 cts. per pound.

La Crosse, Wis.—For furnishing 1,628 tons of pipe, to U. S. Pipe & Foundry Co., of Chicago, at \$25.50 per ton.

LIGHTING AND POWER

Sacramento, Cal.—Business streets of Sacramento will probably be transformed into a "great white way."

Erie, Col.—Ornamental side lights are to be placed in downtown section of Erie at once, design having been accepted and all preliminaries disposed of at meeting of Town Board.

Washington, D. C.—Major F. C. Boggs, of the Army Engineer Corps, general purchasing officer of Isthmian Canal Commission, is sending out specifications for bids for electric lighting materials for Panama Canal.

Atlanta, Ga.—Installation of municipal light distributing system to cost \$200,000 is recommended.

Peoria, Ill.—Electric lighting system will probably be installed at county farm.

Evansville, Ind.—Establishment of municipal electric lighting plant is being discussed.

Goldfield, Ia.—Franchise has been granted to Citizens' Light, Heat & Power Co.

Marble Rock, Ia.—City will shortly vote on bonds for water power system and electric generating station. Estimated cost, \$17,000.

Redfield, Ia.—Town will vote on \$15,000 bonds for electric light and water-works.

Belchertown, Mass.—Electric lighting system will be installed.

Lawrence, Mass.—Alderman Lynch and City Solicitor Murphy have been authorized by City Council to draw up contract with Star Electric Co., of New York, to install new switchboard in fire-alarm room at Central fire station at cost of \$1,380.

Lowell, Mass.—Lowell is going to have a "white way" extending from City Hall to Middlesex St. Depot and

including Merrimack, Prescott, Central and Middlesex sts.

Reading, Mass.—Town of Reading has voted, 248 to 12, to accept proposition of Malden & Melrose Gaslight Co. to supply town with gas. They will furnish it at \$1.50 per 1,000 ft. until consumption reaches 15,000,000 ft. per annum, when price will be cut to \$1.25 net. Further reduction to \$1 will be made when consumption reaches 20,000,000 ft. per annum.

Reading, Mass.—At special town meeting, held to consider question of gas supply for town, it was voted to accept contract of Malden-Melrose Gas & Electric Co.

Marquette, Mich.—Electric light plant is to be installed.

Newark, N. J.—Contract between city and Public Service Electric Co. for lighting city streets has been approved by Board of Works.

Stockton, N. J.—This borough is to be lighted by gas, to be installed by the New Jersey Northern Gas Co.

East Schodack, N. Y.—Lighting of streets by electricity is being discussed.

Philmont, N. Y.—Chatham Electric Light Co. is making preparations for extension of their lines to this village, having been awarded contract to light.

Axtell, Neb.—Franchise has been granted Elmer Jensen, of Harvard, for installing electric lights.

Wilton, N. D.—Installation of number of street lights is being considered.

Dayton, O.—Question of municipal electric lighting system is being discussed.

Youngstown O.—In order that Wick Park may be enjoyed to its fullest between 300 and 400 North Side residents have petitioned Park Commission to install electric lights throughout park, to be lighted only during summer evenings.

Blackwell, Ok.—Citizens of Blackwell have voted \$100,000 in bonds for construction of municipal gas pipe line.

Woodburn, Ore.—After nearly three years of negotiations between city and Portland Railway, Light & Power Co. over street lighting question, Council has adopted resolution authorizing Mayor and Recorder to enter into contract with company for system of 140 incandescent lights of 80 candlepower, which will be distributed so as to light all parts of city. Contract is for term of fifteen years, and city will pay \$14.40 for each lamp annually.

Canistota, S. D.—Electric light plant will be installed.

CONTRACT AWARDED.

Yonkers, N. Y.—To Canepi & Nolan, for setting lamp standards, at \$2,700.

Tacoma, Wash.—By city for copper wire to be used in installing three-phase system in light department to Bowie & Lene at \$7,560.

FIRE EQUIPMENT

Fresno, Cal.—City is considering purchase of motor fire apparatus.

Los Angeles, Cal.—Chief of Fire Department has recommended to Fire Commission that bids be advertised for at once for lot within radius of three blocks of Slauson ave. and Figueroa st., to be used for establishing engine house.

Tulare, Cal.—Bond issue of \$8,000 has been approved for purchase of two fire-fighting apparatus, and issue of \$2,000 for fire alarm telegraph system.

Lindale, Ga.—Fire alarm system will be installed.

Muncie, Ind.—Plans and specifications for new fire station of sufficient size and cost of which will not exceed amount likely to be appropriated by City Council will shortly be submitted to Committee on Fire Department.

Richmond, Ind.—Fire Chief Miller recommends purchase of combination chemical, hose and engine auto truck.

Hutchinson, Kan.—Fire alarm system will be remodeled.

Augusta, Me.—The Titcomb lot, located on corner of Pleasant and Bridge sts., has been decided upon as site for proposed new central fire station.

Hagerstown, Md.—A committee from Antietam Fire Co. has asked County Commissioners that \$2,250 be given the company towards purchasing new automobile fire truck.

Norton, Mass.—Town will purchase auto truck and fire hose.

Orient Heights, Mass.—Sum of \$15,000 has been appropriated by City Council for purchase of motor fire apparatus.

St. Paul, Minn.—Accusing Fire Board with backwardness in provision of mod-

ern fire fighting apparatus, Reuben Warner, fire commissioner, has made strong appeal for item of \$100,000 to be added to this year's budget for purchase of motor-driven apparatus.

Florence, N. J.—Hand-drawn chemical apparatus will be purchased by city.

Long Branch, N. J.—Auto truck will be purchased for Deal Fire Department.

Roselle, N. J.—Preliminary steps toward purchase of auto fire truck and hose wagon and necessary accessories have been taken by Borough Council and resolution has been presented providing for a \$10,000 bond issue for this purpose. Matter will be laid before voters on November 5. Resolution was unanimously passed.

Amsterdam, N. Y.—City Clerk has been ordered to advertise for bids on motor fire truck, according to specifications which are on file in his office.

Oneida, N. Y.—Purchase of steamer is being considered.

Muskogee, Okla.—Bids for 2,000 ft. of 2½-in. hose, nozzle and extinguishers will be received Oct. 2.

Geneva, Pa.—New central fire station will be erected to cost \$12,000.

Warren, Pa.—Council has approved action of purchasing committee in buying automobile combination hose and chemical wagon from La France Company for \$5,500.

Williamsport, Pa.—Bids will be advertised for chemical and hose wagon and 1,000 ft. of hose.

Providence, R. I.—Purchase of motor-driven ladder truck to replace truck now in service at Station 6, at Atwell's ave. and America st., is recommended to City Council by Fire Commissioners.

Aberdeen, S. D.—Purchase of hook and ladder truck and motor combination chemical and hose wagon is recommended.

Beaumont, Tex.—Council has ordered purchase of \$3,500 automobile for use of fire chief.

Dallas, Tex.—City Commissioners have been asked for new first station on Augusta st., in East Dallas.

San Antonio, Tex.—City will purchase two hook and ladder trucks and another fire engine.

Alexandria, Va.—Purchase of additional fire engine and chemical wagon is recommended.

Tacoma, Wash.—Council has authorized \$11,000 for new aerial truck and \$6,000 for combination truck.

Janesville, Wis.—Purchase by city of motor-propelled piece of fire apparatus for No. 2 fire station to be substituted for two horse-drawn vehicles now in use there is recommended by Chief of Fire Department H. C. Kline.

Janesville, Wis.—Purchase of motor fire truck is recommended.

CONTRACT AWARDED.

Washington, D. C.—By Commissioners to Webb Company, of New York City, for furnishing one motor aerial hook and ladder truck at \$9,300, and to the Ahrens-Fox Fire Engine Co., of Cincinnati, O., for installing a new boiler and rebuilding extra fire engine No. 1 at \$2,890.

Grand Rapids, Mich.—By Board of Police and Fire Commissioners, for furnishing motor apparatus as follows: Grand Rapids Motor Truck Co., one six-cylinder-chassis at \$2,800; Couple Gear Freight Wheel Co., one four-wheel drive electric tractor to be attached to aerial truck, at \$5,450.

Dallas, Tex.—By Board of Municipal Commissioners, to Rennsalaer Valve Co., for 90 6-in. three-way Corey fire hydrants, at \$26.33, and for 10 4-in. three-way Corey fire hydrants, \$22.70.

Waco, Tex.—For furnishing one motor fire engine to Webb Company.

BRIDGES

Eufaula, Ala.—It has been decided to make some needed improvements in Toney bridge over Cowhee Creek, five miles north of city, and also Barbour bridge, just south of town. County will expend \$4,000 toward project.

Los Angeles, Cal.—Board of Public Works has been authorized by Council to advertise for bids to renew floor of the Ave. Forty-three bridge across Arroyo Seco, and floor of bridge across river at Downey ave.

Napa, Cal.—Supervisors have decided to raise \$13,000 by direct tax to construct new stone bridge over Transas Creek, one mile north of Napa.

Washington, D. C.—Several spans of Aqueduct bridge over Potomac River will be replaced. Estimated cost, \$3,600.

Tampa, Fla.—City Council has instructed Board of Public Works to pro-

ceed with construction of temporary bridge to carry pedestrians and wagons across Hillsborough River at Jackson st., to be of width not less than 26 ft., provided job will not cost to exceed \$8,000.

Macon, Ga.—Sum of \$2,000 has been appropriated for repairs to Spring st. bridge.

Des Moines, Ia.—Expenditures of \$100,000 for concrete bridges will be voted on in November.

Lowell, Mass.—Alderman Brown has introduced order for \$3,500, city's share for expense of building bridge over Wamesit Canal in Lawrence st. Bridge, it is estimated, will cost \$14,000.

Grand Rapids, Mich.—Looking forward to construction of new cement bridge across river at Pearl st., Alderman Renihan has submitted resolution to Council providing for investigation by Board of Works into probable cost of removing present structure to Butterworth st.

Cincinnati, Ohio.—Plans and specifications for new concrete bridge have been approved. Estimated cost, \$10,275. It will take place of one on Clark road.

Cleveland, O.—Bids will be received at office of City Auditor, room 213, City Hall, until 12 noon, Oct. 7, for purchase of \$500,000 Clark Ave. Bridge Coupon Bonds. Thomas Coughlin, City Auditor.

Dayton, O.—Bids will be received at the office of Auditor until 12 o'clock noon, Oct. 7, 1912, for sale of bonds in amount of \$15,200 for purpose of providing additional money to pay for the construction of bridge at Keowee st. G. W. Bish, City Auditor.

Lisbon, Ohio.—Stating that it would cost \$60,000 to build emergency bridges in southern part of county to replace those which had been washed away from their foundation by floods of Sept. 1 and 2, County Commissioner McCamon has announced that county would be compelled to sell bonds to cover this amount.

Toledo, O.—Plans of Pennsylvania to erect new steel bridge across Maumee River at foot of Oliver st. are beginning to take definite shape. Tentative drawings have been submitted to Public Improvement Committee of Council.

Youngstown, O.—Plans will be considered for entirely new bridge crossing river and connecting with Poland ave.

Portland, Ore.—Plans for construction of immense reinforced concrete viaduct on Holgate st., extending from East Eighteenth to East Twenty-fourth, over Southern Pacific tracks, have been prepared by officials of company and have met with approval of Mayor Rushlight and other city officials. This viaduct, which will cost approximately \$75,000, will eliminate dangerous grade crossings.

Salem, Ore.—Construction of new bridge across Willamette river is being considered.

Chester, Pa.—Repairing of Pennell st. bridge is being considered.

Johnstown, Pa.—Construction of bridge to connect First and Fifth Wards is being considered.

Pittsburgh, Pa.—Resolution has been introduced instructing Department of Public Works to go ahead with preparation of plans and prepare to start on Beechview bridge, for which \$75,000 was provided in the 1910 bond issue.

Nashville, Tenn.—Large number of citizens of Edgefield Junction are planning to petition County Court of Davidson County in October to build bridge across Cumberland River near Edgefield Junction.

Orange, Tex.—Cost of constructing bridge across Sabine River at point connecting trans-Calcasieu road with east end of Green ave. has been estimated at \$30,000.

Sherman, Tex.—Grayson County Commissioners' Court have passed order to present to voters of county at general election in November proposition to raise funds to be used in construction of concrete culverts and bridges throughout county.

Ogden, Utah.—Upon recommendation of City Commissioner J. C. Nye, Board of Commissioners have passed bill providing for building of bridge across Weber River at Thirty-third st.

Manitowoc, Wis.—Nearly \$2,000 will be spent by city in repairing Eighth and Tenth street bridges.

Racine, Wis.—That new dock be put in at west end of Fourth st. bridge, and that structure be replanked and 15 ft. of roadway on Bridge st., leading to bridge, be paved with cedar block instead of brick has been formally decided on by Common Council.